

University of Strasbourg
Master CAWEB - Multilingual Web Communication



Marketing 5.0: Challenges and Opportunities of AI-Driven Marketing

Valeria PANZETTA

Master Thesis

Supervisor: Mr. Franco FOLINI

Academic Year 2023 – 2024

Table of Contents

Acknowledgements	3
Summary	3
Part 1: Knowing the University of Strasbourg and the CAWEB Master	5
History and Evolution of the University of Strasbourg.....	5
Foundation and Early Years.....	5
Expansion and Modernization.....	5
International Ranking and Impact.....	6
Part 2: CAWEB Master	8
Overview of the CAWEB Master Program.....	8
Program History and Evolution.....	8
Curriculum and Specializations.....	8
20th Anniversary Celebration.....	9
Market Position and SWOT Analysis.....	10
Strengths, Weaknesses, Opportunities, Threats (SWOT Analysis).....	16
Digital Marketing on LinkedIn, Instagram, YouTube: an Overview.....	22
Digital Marketing and Communication: Interviewing Students and Alumni.....	25
Feedback and Recommendations.....	27
Part 3: Content Creation and Ethics in Digital Age	30
Digital Marketing 5.0.....	30
Generative AI and Ethics.....	30
The European Regulatory Framework: DMA, DSA and the AI Act.....	31
Asana and “The State of AI At Work” report.....	35
The Full-Stack Marketer.....	38
The Role of AIO Content Writers.....	39
Challenges in AI-Generated Content.....	41
The C.R.A.F.T. Framework.....	43
The Evolution from SEO to Generative Engine Optimization (GEO).....	45
Understanding Deepfakes.....	48
Case Study: “In Event of Moon Disaster”.....	48
Strategies for Detecting and Countering Deepfakes.....	50
Part 4: Generative AI Prompt Engineering: Mastering the Art of AI Instruction	52
A New Paradigm Shift.....	52
The Role and Skills of a Prompt Engineer.....	52
Defining Prompts: The Key to Effective AI Interaction.....	53
Software Patterns vs. Prompt Patterns: A Comparative Overview.....	55
Advancing AI Communication: Prompt Improvement, Interaction, and Context Control.....	59
Prompt Engineering Frameworks: An Overview.....	61
AIDA Prompt Framework for Digital Marketing.....	62
CO-STAR Methodology for Prompt Framework Creation.....	63
Singapore Government Prompt Royale: Prompt Engineering Tournament.....	64
Conclusions	64
References	66

Acknowledgements

I would like to express my gratitude to all the instructors who have followed me and with passion have been able to transfer their expertise to me, during this academic year.

My sincerest thanks go to Ms. De La Paix for her dedication and attention to detail, with which she has made Master CAWEB be born, grow, and evolve while keeping up with the times.

Equally I would like to extend my heartfelt thanks to Ms. Marie-Aude Sourd-Ramos, an irreplaceable guide in my internship journey, for her valuable advice especially in the field of UX design, honest feedback, and for her helpfulness and listening in the work environment.

Special thanks go to my study colleagues, with whom I had the opportunity to collaborate and share moments of comparison, growth, and mutual support. The team spirit has made this academic year particularly meaningful.

Summary

Over the past decades, digital marketing has undergone a significant transformation from traditional approaches to increasingly digital and interactive strategies.

The evolution of digital marketing has accelerated significantly, marked by the integration of artificial intelligence (AI). Artificial intelligence has shifted the way companies interact with consumers and customers, as well as in recruiting new employees and managing resources. This new era of digital marketing can be referred to as Marketing 5.0.

This thesis work aims to expose what Marketing 5.0 represents, review the recent European Union regulations and ethics in the use of AI, exemplify risks and benefits associated with its use, compare traditional methodologies such as SEO with GEO, investigate how the job market is responding to the urgency of understanding this disruptive technology, and the job figures most affected.

Additionally, case studies and real applications in prompt engineering are provided.

The aim of this thesis and research work is to provide an in-depth global overview of the current dynamics of Marketing 5.0, offering insights and further study in readers, students, marketing professionals, academic staff interested in grasping the potential of artificial intelligence in the Marketing field.

Part 1: Knowing the University of Strasbourg and the CAWEB Master

History and Evolution of the University of Strasbourg

Foundation and Early Years

The University of Strasbourg is a unique institution with a distinct history. Its foundation dates to 1538, when Protestant student Johannes Sturm founded it. Its roots are in a Protestant Gymnasium aimed at educating the people in the humane teachings of the time. It was only in 1631 that it was proclaimed a Royal University, marking the beginning of the practice of learning as it is known today.

Expansion and Modernization

In 1870, following the Transference of Alsace to the German Empire after the Franco-Prussian War, the University of Strasbourg was known as Kaiser-Wilhelms-Universität, which went through a phase of impressive expansion through the creation of new libraries, institutes, and fields of studies which saw a multitude of academic professionals and intellectuals.

Even during the turbulent 20th century, the University of Strasbourg stood firm. In 1918, as the Alsace region was reannexed to France, students and faculty united as a single block in the Resistance, a testament to the university's resilience and determination.

Prominent among them was a history professor, Marc Bloch: he was first tortured and then killed for taking part in the Resistance as a leader. 1947, after the Liberation, the University of Strasbourg was awarded the Medal of Resistance.

One of these is the history professor Marc Bloch, who, as leader of the resistance, was captured, tortured, and, and then executed. In 1947, in the wake of Liberation, the University of Strasbourg was decorated with the Resistance Medal.

In 1971, the University of Strasbourg was divided into three significant universities with three different areas of specialization: Strasbourg I (Université Louis Pasteur), Strasbourg II (Université Marc Bloch), and Strasbourg III (Université Robert Schuman). In 2009, the three academic entities merged, converging under Université de Strasbourg.

International Ranking and Impact

According to recent developments, the University of Strasbourg plays a leading role in the French and global academic landscape. With its 42,000 students, it ranks second in France as the most international university city, with a comprehensive and constantly updated offering of courses of study in various academic fields.

The University of Strasbourg stands as one of the significant and prominent higher institutions of learning in the entire management landscape of France. In the academic calendar of 2020-2021, the fall of this population was around 56875. Of these students, more than 20% are international students from 156 countries making the school one of the most appealing in regard to the cultural diversity in the whole country.

The university has 282,791 enrolled majors with regards to the associates to corresponding doctor's degrees concluding with broad areas from diplomas and master's levels accounting for 87 and 33 for master's and doctoral levels respectively. Université de Strasbourg is a world-recognized center of excellence in research with focused efforts in this area of eight thousand and fourteen faculty and researchers plus support including two thousand three hundred eighty-eight administrative and technical personnel.

However, it has 70 units of research and 10 schools of doctorate with over 2100 active students who are at the postgraduate level.

In the absence of such a strong research base, the institution becomes engaged in a variety of activities such as active involvement in foreign actions and cooperation with other known research institutions¹.

Over the last few years, the University of Strasbourg has significantly improved its position in the world's most prestigious academic rankings.

In 2024, the university made a remarkable leap in the Shanghai rankings, entering the top 150 universities in the world. This progress reflects the school's excellence in various fields, including the natural sciences and medicine, where it is ranked among the world's top 100 schools².

The Shanghai ranking is among the world's most highly regarded indicators of research quality and learning outcomes.

The University of Strasbourg has earned high marks due to its strong scientific output, the number of articles published in high-impact journals, and the numerous international distinctions and awards given to its researchers.

This Shanghai ranking achievement consolidates the University of Strasbourg's position as one of France and Europe's most prestigious higher education institutions, consolidating its commitment to research excellence and teaching quality³.

¹"Facts and Figures - University of Strasbourg." 2020. Unistra.fr, accessed 15 August 2024, <https://en.unistra.fr/about-us/facts-and-figures>.

²"ShanghaiRanking-Universities." 2024. Shanghairanking.com, accessed 15 August 2024, <https://www.shanghairanking.com/institution/university-of-strasbourg>.

³ Ch. B. 2024. "Enseignement Supérieur. L'Université de Strasbourg Progresse Dans Le Classement de Shanghai." www.dna.fr. Les Dernières Nouvelles d'Alsace, accessed 15 August 2024. <https://www.dna.fr/education/2024/08/15/l-universite-de-strasbourg-progresse-dans-le-classement-de-shanghai>.

Part 2: CAWEB Master

Overview of the CAWEB Master Program

Program History and Evolution

The University of Strasbourg's CAWEB Master's program, which celebrates its 20th anniversary in 2024, represents one of Europe's most highly regarded and comprehensive training courses in web, localization, and multilingual communication.

Launched in 2002 and started thanks to Head of Studies Renate De La Paix, the program has grown exponentially over the years, from an initial group of nine students to more than a hundred students enrolled from the first year for the second year in 2023.

The 20th anniversary of the University of Strasbourg's CAWEB Master's program will be celebrated in 2024. It is one of the most respected and extensive training programs in Europe for web, localization, and multilingual communication.

With the help of Head of Studies Renate De La Paix, the program was begun in 2002 and has grown significantly since then. In 2023, over 100 students are enrolled for the second year, having started off as nine in the first year.

The CAWEB master's degree was designed by Renate De la Paix to cater for the emerging requirements within the digital area. It has those who are engaged in the technical aspects as well as the language aspects, which few other programs embrace.

Curriculum and Specializations

Ever since its establishment, the master's program has set itself apart by its capacity to adjust to continuous advancements in multilingual web communication. New

components have been steadily added to the curriculum, including UX Design specializations and distant learning.

The program's ability to quickly adapt to changing market trends and needs is reflected in the courses, which encompass digital media and user experience design, guaranteeing alumni are prepared to take on difficulties in the workplace.

To increase access and give professionals who are already employed in the field training possibilities, the program has been offering distant learning and training options since 2008.

CAWEB master's program has one of the best distinguishing factors which is multilingualism. Firstly, students can pick even among several options of languages (English German Spanish and Japanese) for foreign students French is a second language. This readiness to speak many tongues indeed equips these students for the global labor market and it increases the chances of such students in areas which require not only technical skills but also language skills.

20th Anniversary Celebration

In June 2024, the CAWEB Master's program held an event to celebrate its 20th anniversary. Anniversaries are dates for everyone to stop and evaluate what has been achieved. At the same time, they go hand in hand with a spirited vision for a number of new activities and partnerships.

More initiatives are being launched including a relationship with Louisiana Technological University as well as Centennial College in Canada which aim to further broaden the program's educational aspects and enhance its global scope.

The program features several symposiums and master classes centered on the various aspects of the usability and design topic, thus enabling interaction and learning by the scholars and the practitioners who are part of the order.

Perhaps the most beneficial aspect for students is using the acquired knowledge in practice by content managing the Master's site, publishing online blogs, and handling social media. Such interaction boosts their competence and helps them cope with the questions that await them after college.

Master CAWEB involves the real world due to the presence of the faculty in practice and to the continued partnership with brands that shape the industry. This size of involvement and the bond between the alumni and the profession made CAWEB one of the leading and popular programs in technical communication and localization that enhances the user experience.

In particular, the plans of the CAWEB Master's programs development seem to be rather well-grounded, as they are being diversified both in content and opportunities. The newly developed UX Design course which is entirely online and English-speaking is proof that CAWEB pursues the vision of being modern and provides courses which the global market requires.

This year, CAWEB Master's marks its twenty years of achievements and the journeys ahead. It can equip the next cohort of web professionals with skill cut ups, foundational training, and cultural literacy.

Thanks to an ever-evolving program and a worldwide presence of partners and alumni, CAWEB is poised to serve as a standard in digital training for years to come.

Market Position and SWOT Analysis

The CAWEB Master's course offered by the University of Strasbourg is focused on multilingual web communication, UX interaction and digital project management. It responds to the need for a growing workforce in the areas of digital marketing, web development and localization especially in the fields of information technology and

communication. Offering such a program with provision for distance learning and multilingual orientation is very pertinent in this 21st century job economy.

A competitive benchmarking of the rivals was carried out in the first instance. Upon determining the competitors of the CAWEB Master's - Online Master's in Multilingual Web Communication & User Experience Design (main domain: <https://mastercaweb.unistra.fr/>, sub-domain: <https://mastercaweb.unistra.fr/en/>), I then proceeded to gather information on the course modules, fees and social media followership of the universities. I then turned my attention to the analysis of the strategies employed by the competitors, looking at their strengths and weaknesses. Lastly, I provided insights on what could be done to improve the CAWEB English Master website through better Seo tactics.

The Classic Track of the Multilingual Web Communication has also recognized Four Major Competitors:

- Master of Arts in Translation and Localization Management - Middlebury Institute of International Studies at Monterey (USA)⁴

Overview: The curriculum places a significant emphasis on translation and localization project management. It is designed for those who intend to build a career in the field of international communication and localization by combining theory and practice in one program.

Language: English

Duration: 1-2 years

ECTS Credits: 60

Tuition Fees: \$44,936

Type: Online/Onsite

⁴ "Master of Arts in Translation and Localization Management." 2024. Middlebury Institute of International Studies at Monterey. May 2024, accessed 11 July 2024., <https://www.middlebury.edu/institute/academics/degree-programs/translation-localization-management>.

Online Reputation:

LinkedIn: 24,740 followers

Facebook: 30,080 followers

Instagram: 4,831 followers

Twitter: 12,500 followers

Why it's a good competitor: The study program is popular in translation and localization, with a solid online reputation. In addition, it can rely on a strong online social community that is very active.

- M.A. in Translation and Localization Studies - University of Nottingham (UK)⁵

Overview: The University of Nottingham has designed an exemplary degree program in translation and localization with a professional practice approach. This is for individuals who wish to combine languages with technology and the organization of projects in a global context.

Language: English

Duration: 12-24 months

ECTS Credits: 120

Tuition Fees:

UK fees: £9,250

International fees: £22,600

Type: Onsite

Online Reputation:

⁵ "Translation and Localisation Studies MA - the University of Nottingham." 2024, accessed 11 July 2024, Nottingham.ac.uk. 2024. <https://www.nottingham.ac.uk/clas/departments/modern-languages/postgraduate/translation-and-localisation-ma/translation-and-localisation-ma.aspx>.

LinkedIn: 277,243 followers

Facebook: 192,166 followers

Instagram: 84,000 followers

Twitter: 96,300 followers

Why it's a good competitor: The huge presence on social media ensures that there is a large audience ready to participate in the program which improves its visibility. Focusing on several languages and localization practices makes the program stand out and effectively counters Master CAWEB.

- Master of Arts in Translation Online - Kent State University (USA)⁶

Overview: The degree program of the online Master of Arts in Translation of Kent State University caters for professionals with a specialization in translation and translation technology. It caters to the needs of the global population by providing a convenient online learning mode.

Language: English

Duration: 2 years

ECTS Credits: 53

Tuition Fees: \$22,316

Type: Online

Online Reputation:

LinkedIn: 277,743 followers

Facebook: 209,607 followers

Instagram: 39,800 followers

Twitter: 44,900 followers

⁶ "Master of Arts in Translation." 2024. Kent State Online. 2024, accessed 11 July 2024, <https://onlinedegrees.kent.edu/degrees/master-of-arts-in-translation>.

Why it's a good competitor: Kent State's program, especially its online component, is attractive hence there is no way its professionals would not find such learning appropriate. It caters for working professionals who need a less rigid pedagogical strategy, and this can lure prospective Master CAWEB students.

- Master in Translation and New Technologies - Instituto Superior de Estudios Lingüísticos y Traducción (ISTRAD) (Spain)⁷

Overview: ISTRAD offers a specialized program focusing on the intersection of translation and technology. The program is available both online and on-campus, making it accessible to students interested in the technical aspects of translation.

Language: English

Duration: 1-2 years

ECTS Credits: 60

Tuition Fees: €2,160

Type: Online/Onsite

Online Reputation:

LinkedIn: 11,300 followers

Facebook: 4,800 followers

Instagram: 5,400 followers

Twitter: 5,200 followers

Why it's a good competitor: With the availability of low-cost programs and a strong focus on new translation tools, this course is likely to be one of the strongest contenders for students wishing to obtain an inexpensive yet a complete qualification in the domain of study.

Four main competitors have been identified for the UX Specialization Course:

- Master of Science in User Experience (UX) - Arizona State University (ASU) Online⁸

⁷ "ISTRAD - Master's in Audiovisual Translation." 2024, accessed 11 July 2024, Mastradumatica.com. 2024. <https://www.mastradumatica.com/en/>.

⁸ "Master's in User Experience – UX Design | ASU Online." 2024. Asu.edu. 2024, accessed 11 July 2024, <https://asuonline.asu.edu/online-degree-programs/graduate/online-user-experience-masters/>.

Overview: This program focuses on user experience research, design, and communication. It prepares students for roles as UX designers and researchers. The program is also flexible and does not require the GRE for admission.

Duration: 18-24 months

Tuition: Approximately \$40,000 for the entire program

Why it's a competitor: ASU's program is well recognized and offers a comprehensive curriculum that integrates UX principles with technical and communication skills. It is a valid alternative for students interested in UX design with particular attention to digital interfaces.

- Online Master in UI/UX Design - LABASAD⁹ Conclusions

Overview: This program offers an in-depth curriculum centered on UI/UX design, including courses in wireframing, user research, information architecture, and interactive prototype development with tools such as Figma. It emphasizes practical skills and creative digital design.

Duration: 12 months

Tuition: Not publicly listed; proprietary title awarded

Why it's a competitor: LABASAD's program focuses on UI/UX, providing a hands-on approach that mainly appeals to designers who desire to deepen their skills in creating user-centered digital products.

- Online Master of Arts in Mass Communication with a concentration in Web Design - University of Florida¹⁰

Overview: This program blends UX principles and web design. It includes courses in coding, design, and strategic communication, intending to provide students with the skills to create effective and engaging digital platforms.

Duration: 16 months

Tuition: \$22,191 for the entire program

⁹ "Online Master in UI/UX Design • LABASAD." 2024. LABASAD. July 4, 2024, accessed 11 July 2024, <https://www.labasad.com/en/master/online-master-in-ui-ux-design/>.

¹⁰ "Online MA in Communication | Web Design | UFCJC." 2024. UF CJC Online Master's. August 22, 2024, accessed 23 August 2024. <https://onlinemasters.jou.ufl.edu/web-design/>.

Why it's a competitor: The University of Florida offers a multidisciplinary approach that integrates design with communication strategies, making it ideal for students seeking to combine UX with more extensive communication skills.

- Master of Science in User Experience (UX) - Michigan State University (MSU)¹¹

Overview: This program offers an in-depth look at user-centered design, usability testing, and human-computer interaction. Emphasizing a “user-first” perspective prepares students for UX design and research leadership roles.

Duration: 2 years

Tuition: \$867 per credit hour (in-state), \$1,703.50 per credit hour (out-of-state)

Why it's a competitor: MSU's program is designed for students seeking to progress into UX leadership roles. It provides a solid theoretical foundation blended with the practical application of planning for various audiences.

Strengths, Weaknesses, Opportunities, Threats (SWOT Analysis)

Strengths

- Comprehensive Curriculum: Master CAWEB offers students advanced study within two tracks (with the Classical Track and The UX Design Track) and interdisciplinary international relations communication, user experience design, digital marketing, and project management. In this way, graduates are ready to engage in a comprehensive coverage of job roles in the fields of digital communication and localization.
- Flexible Learning Options: Master CAWEB offers courses in the form of attendance and distance. This is an advantage for international students and working professionals who require flexible working hours.
- Strong Reputation: Master CAWEB which is integrated into the system of the University of Strasbourg, a prestigious higher education institution, also gets

¹¹ 2024. Msu.edu. 2024, accessed 23 August 2024, <https://gradstudies.mi.msu.edu/ux/>.

the advantages of the enhanced academic status of the school, which increases the value of the diploma in the labor market for the graduates.

- In Depth Approach: focus on multilingual communication (English, French, German, Spanish, Japanese) is one of the strengths of the program enabling students to explore jobs in the global spaces where more than one language is used, which is becoming more and more relevant in the present cross-cultural job marketplace.

Weaknesses

- Europe-wide recognition: The program may get high marks in the French as well across the European Union, yet it is bound to be looked at positioning it against other equivalent programs at McGill University or the Middlebury Institute which are world class.
- Strong Dependence on the Francophone Market: Although the program has features in several languages, it is primarily directed at francophone students, thus limiting its appeal to a more global audience Diversifying the Program in Terms of Language. A clear cause for concern.

Opportunities

- Growing Demand for Digital Skills: Specifically for the demand for internet professionals, UI, UX designers, localization professionals globally increasing student enrollment is a factor that presents a huge opportunity for the CAWEB program, toward more students seeking further education in such areas One opportunity particularly about integrating tools would be to all generative artificial intelligence applications, which tend to focus on specific course-centered subjects.
- Partnerships with Technology Businesses and Academic Institutions: forging relationships with ICT industry companies where the students would take their internships and with other universities in sharing curriculum could also improve the practical component of the program attracting more students.

- Strengthened Marketing Strategies: Distributing information on global marketing trends coupled with the potential expansion of CAWEB Master program influence could help increase participation of US and Canada students without any further recruitment efforts.

Threats

- Competition from Other Universities: MA CAWEB is however too competing within head-on academic competition since other universities offer similar courses of study making it even more competitive especially in the United States of America and the United Kingdom.
- Technological Disruption: Owing to the competing institutions' integration of increasingly advanced technologies such as generative artificial intelligence into marketing and localization, these advanced degrees do not come cheap. Such technologies have disruptive power and a market that is global, and companies are looking to avail themselves more. This is to say that there is a danger that this curriculum will get stale and may not be revised in time.
- Language Barriers: This discouragement may lead to looking for CAWEB Master 's degrees but creeping in the fear that French will be a compulsory language thus making the institution undesirable for them.

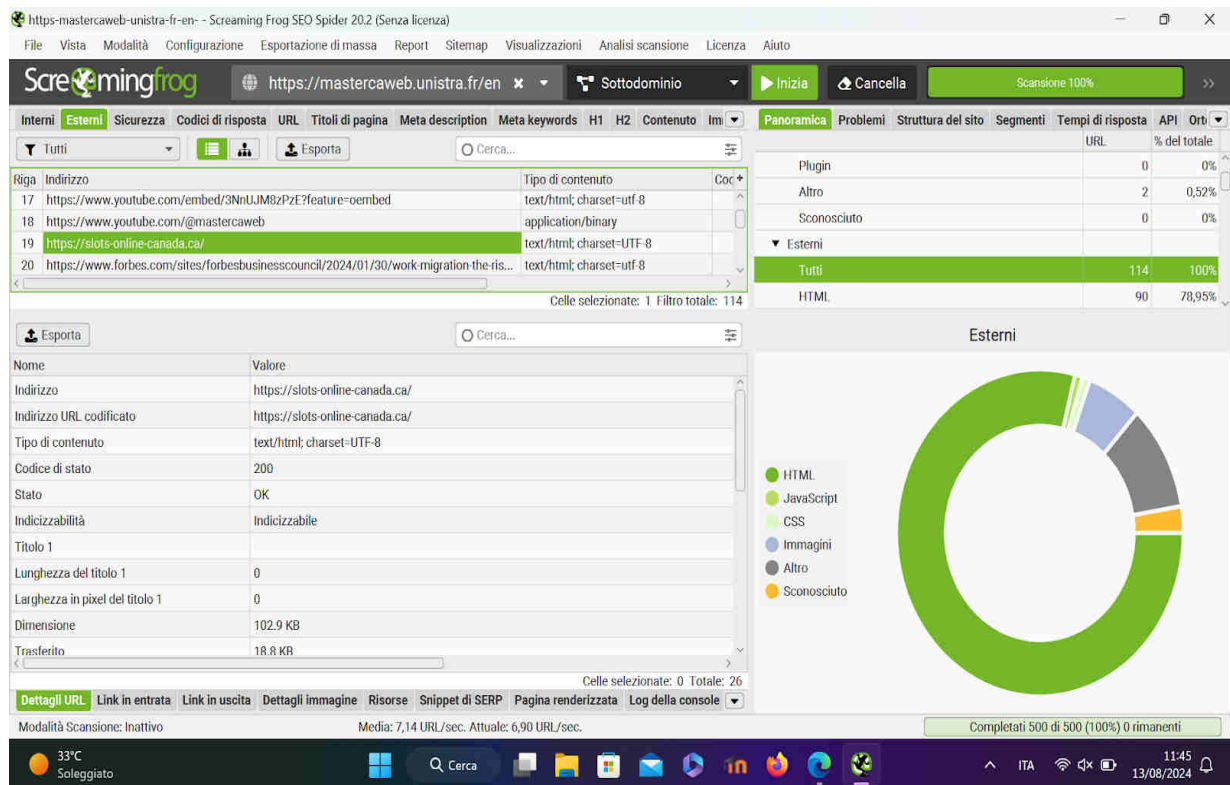
Several tools can be used to find keywords for a page or website. Valid tools such as those provided by SEMrush and SERPstat are either paid for or offer limited functionality.

First, I started using the free tools from SEMrush and Screaming Frog to perform the Site Audit of the Master CAWEB English version website. From the Thematic Report obtained with SEMrush in the free version, the Site Health (score based on the number of errors and warnings found after scanning the site and uniqueness) is 82 percent, crew ability 92 percent, HTTPS 100 percent, international SEO 100 percent, site performance 91 percent, internal linking 88 percent, markup 100 percent.

Several other highlights were reported. Errors to be fixed included one link with non-descriptive anchor text, 1 page or external resource with HTTP 403 status code,

two multiple H1 tags, four broken external links, seven missing H1, eight long title elements, nine duplicate contents in H1 and title, 11 links without anchor text, 27 pages with only one internal link, and 40 missing meta description.

Additional errors were detected using the SEO tool Screaming Frog¹². They shared them with the Web Development team, including a link to a Canadian online gambling site unrelated to the CAWEB Master.



Source: Screaming Frog. 2022. "Screaming Frog SEO Spider." Screamingfrog.co.uk. 2022. <https://www.screamingfrog.co.uk/seo-spider/>.

Most SEMrush features are fee-based. For this reason, I chose to challenge the potential offered by Generative Engine Optimization by leveraging ChatGPT4o, a paid variant of the ChatGPT AI model developed by OpenAI. I followed the notions I learned about prompt engineering for queries.

I applied prompt chaining (a technique used to harness the power of large language models to achieve the desired output by breaking a complex task into small parts.

¹² Screaming Frog. 2022. "Screaming Frog SEO Spider." Screamingfrog.co.uk. 2022. <https://www.screamingfrog.co.uk/seo-spider/>.

So, one output serves as input for the next. These prompts are logically linked together and help the LLM in reasoning) to achieve the expected production of the desired answer.

I have organized the inherent CAWEB Master's topics comprising the two study tracks into two macro-categories: main issues and secondary topics. They are part of the main topics of Multilingual Web Communication, UX Design, Online Master's Program, Web Localization, International Web Communication, and Digital Media. User Experience (UX) Design, Web Content Strategy, Multilingual SEO, Online Learning, and Digital Communication are part of the secondary topics.

To conduct keyword research, I queried ChatGPT 4o, consequently identifying five primary and two long tail keywords, as well as a comprehensive report:

- Primary keywords: "Multilingual Web Communication," "UX Design Master's Online," "Online master's in web communication," "Web Localization Courses," "Digital Communication Degree Online."
- Long Tail keywords: "online master's in multilingual communication," "UX design courses for beginners."

ChatGPT 4o has sorted keywords by intent in the output:

- Informational: "Multilingual Web Communication," "Web Localization Courses," "Best UX Design Master's Programs," "Online UX Courses for Beginners"
- Transactional: "UX Design Master's Online," "Online master's in web communication," "Digital Communication Degree Online," "UX Design Certification Online"
- Navigational: "Master CAWEB Program Details," "Apply to CAWEB Online"

An explanation of each 'intent' is given below:

- Informational: to search for information. To be included in articles in the Blog section.

- Transactional: to complete an action (e.g., enroll in a course of study). Ideal for placement on the landing page and when encouraging the user to apply for the master's degree.
- Navigational: to find a site or a specific page on the site. This will be included on the site and on the curriculum information pages.
- Commercial: to be included on pages where costs are mentioned, thus helping the user decide.

The keywords were then sorted according to Search Volume.

Keyword	Search Volume	Keyword Difficulty	CPC	Intent	Relevance
UX Design Certification Online	2,000	High	\$6.00	Transactional	High
UX Design Master's Online	1,500	High	\$5.50	Transactional	High
User Experience Design Online Course	1,600	Medium	\$5.00	Transactional	High
Multilingual Web Communication	1,200	Medium	\$3.00	Informational	High
Best Online UX Design Programs	1,200	Medium	\$4.50	Commercial	High
Online UX Courses for Beginners	1,000	Medium	\$4.20	Informational	Medium
Best UX Design Master's Programs	1,100	Medium	\$4.80	Informational	High
Online Master's in Web Communication	900	Medium	\$4.00	Transactional	High
Digital Communication Degree Online	800	Medium	\$3.50	Transactional	High
Master's in UX Design Comparison	800	Medium	\$3.80	Commercial	Medium
Online Degree in Digital Media	700	Medium	\$3.60	Transactional	High
Web Localization Courses	600	Low	\$2.80	Informational	Medium
Multilingual Digital Communication	500	Medium	\$3.30	Informational	High
Web Content Strategy Master's	500	Low	\$3.10	Informational	Medium
CAWEB Master's Cost	400	Low	\$3.00	Commercial	High
Apply to CAWEB Online	300	Low	\$2.50	Navigational	High
Master CAWEB Program Details	200	Low	\$2.00	Navigational	High
CAWEB Master's Admission Requirements	150	Low	\$1.80	Navigational	High

Source: OpenAI. 2024. "ChatGPT." ChatGPT. 2024. <https://chatgpt.com/>.

Keywords and related metrics were analyzed, focusing on those with high search and low competition most relevant to Master CAWEB.

Digital Marketing on LinkedIn, Instagram, YouTube: an Overview

During the spring and summer months, articles were scheduled for the Blog section focusing on UX design and the benefits of an online master's degree in Multilingual Web Communication and UX design.

Members of the various teams received further guidance on metrics and keyword analysis, intending to work on new content according to a shared directive.

Another essential aspect of digital marketing was managing the CAWEB Master Profile on LinkedIn, a popular global online platform connecting professionals worldwide. Users can create a complete professional profile and network, respond to job offers, and allow companies to present their businesses and post job offers on the platform.

The main objective was to maintain the already acquired followers, acquire new ones, and reach a wider audience more comprehensively than the French target audience. For this reason, several digital marketing strategies were studied and implemented.

To achieve the primary objectives, textual content was published in English. In addition, special attention was paid to the days and times for publishing content: Tuesdays and Thursdays, between 1 p.m. and 3:30 p.m. Wednesday was excluded as a day for content publication to leave the French CAWEB Master team free to publish.

Analyzing the situation required updating and acquiring some skills in how LinkedIn is used in the digital marketing context. I handled everything related to text and multimedia content's creation and publication scheduling, work performance monitoring, and A/B testing.

Every post has a text element regardless of the size of the content picture, carousel, or video. To promote the articles published in the Blog of the English Master CAWEB website, I composed the title and the main body where the maximum number of paragraphs did not exceed three; at the end, there is a notable CTA to click on the link to read the full article and related hashtags. A summary consisting of an emoji illustrating the content has also been placed at the beginning of the title and the paragraph. I included one image prepared by a co-worker from the Visual Design team suitable for a LinkedIn post.

The results were in all respects like posts published before June 2024 and in the twelfth week before that and over the year prior where there was a CTR of 4.5-6.5%.

Regarding the sharing of the three interviews conducted in Strasbourg with CAWEB Master students and alumni, I investigated which type of content shared on social could guarantee the best performance. To determine this, I conducted A/B testing. First, I created with Canva a 10-second video, introducing the interview and prepared the caption to be posted jointly with the video, on LinkedIn.

The following results were obtained: 515 Impressions, 106 Views, 33 Clicks, 6.41% CTR, and 10 Reactions. Two days later, I published a post on LinkedIn with the same objective but with text and images explicitly created on Canva. The following results were obtained: 1,131 Impressions, 63 Clicks, 5.57% CTR, 10 Reactions. From the test performed and the analysis of the metrics, the second type of post performed better. A different discussion should be addressed for LinkedIn native videos, i.e., those videos should be uploaded directly to LinkedIn without redirecting the user to an external site for full viewing.

A third mode of content distribution is the carousel. As far as LinkedIn is concerned, it is believed that posting a carousel yields five times more than any other type of content¹³.

¹³ Martin, Michelle. 2023. "How to Boost Engagement with LinkedIn Carousel Posts and Ads." Social Media Marketing & Management Dashboard. August 24, 2023, accessed 15 August 2024, <https://blog.hootsuite.com/linkedin-carousel/>.

A LinkedIn carousel is a content format similar to an online flip book. Users scroll through it to view multiple images or videos within a single post. Other social platforms like Instagram and Facebook also have a carousel post format.

I used Canva in the paid version to create carousels¹⁴. This online graphic design tool allows you to create, process, and edit graphic designs such as content for social networks, infographics, posters, and flyers, as well as edit videos. Regarding the carousels for LinkedIn, I have limited the pages to seven, of which the first one serves as the presentation cover, five are dedicated to the presentation of the professional and academic profile of the presented CAWEB Master's instructor, and the last one is reserved for the call-to-action and designed with the user in mind, for the user to apply to become a CAWEB student.

Creating effective LinkedIn carousels involved a nuanced understanding of graphic design principles and accessibility standards. I utilized Canva's paid version to design carousels, limiting the content to seven pages to ensure clarity and impact. The design process required careful consideration of the CAWEB Master website's color palette, which consists of Dark Blue (#27526A), Light Green (#A8C2B9), Orange (#FCA45D), and Red (#DA2317).

In the field of UX design, one challenge that emerged was meeting accessibility requirements. Indeed, not all users perceive colors in the same way, and it is good to make sure that the color contrast of text against the background is adequate. For this purpose, I tested color combinations with a cost-free online software¹⁵, a color contrast checker. This tool allows the user to perform a real-time check, complying with what are the Web Content Accessibility Guidelines (WCAG), a set of recommendations for making the Web more accessible. In terms of color, the international standard defines two levels of contrast ratio: AA (lowest contrast) and AAA (highest contrast)¹⁶.

¹⁴ Canva. 2024. "Canva." Canva. 2024. <https://www.canva.com/>.

¹⁵ Coolors. n.d. "Color Contrast Checker - Coolors." Coolors.co. <https://coolors.co/contrast-checker/112a46-acc8e5>.

¹⁶ w3c_wai. 2019. "W3C Accessibility Standards Overview." Web Accessibility Initiative (WAI). 2019, accessed 02 August 2024, <https://www.w3.org/WAI/standards-guidelines/>.

After several tests of text-ground color combinations, a white background was chosen to convey the idea of cleanliness and simplicity. The text color, Dark Blue, was made slightly darker to increase contrast and, contextually, visibility.

Another important and distinguishing element is the appropriate and balanced use of the 'Unistra' family of typefaces, designed especially for the University of Strasbourg, and available in two font weights:

Regular: The standard, upright font version suits most text applications.

Bold: A heavier, more pronounced font version used for emphasis or headings.

In the next stage, I designed the graphic part, including the placement of the CAWEB Master logo, texts, photos, and graphic elements. The CAWEB Master logo was placed at the top right of the first page; immediately next to it on the left is the name of the master and the new UX Design Specialization. Immediately below, in a central position, is the title of the carousel, and in the center of the page is the photo of the instructor being talked about. Aligned with the CAWEB Master logo and title, the instructor's specialization is listed at the bottom left. The following five pages each contain a title and corresponding descriptive text. The last page is devoted to call-to-action, stimulating users (in this case, potential students interested in directing their careers toward UX design) to apply for the CAWEB Master.

Digital Marketing and Communication: Interviewing Students and Alumni

The process of creating video interviews with CAWEB Master students and alumni also required quite significant efforts and resources in terms of planning, technical skills and creative ideas. In a blended mode, it was possible to interview two of the students and one of the alumni at different academic levels including professional ones and at least one of these former students is currently employed with an international firm in a senior level position. In this case, the student is a Master M2 CAWEB student who is at the final stages of the course and has been doing an

internship in the Franco-German television network Arte. While the second case is of a student completing his Master studies by 2025.

To conduct the interviews, I contacted these three people through LinkedIn and asked for their availability. Availability was granted, and questions were sent a day before to ensure that they were familiar with them. These questions were made following the study path and work career. Many of them willingly shared their likes and interests with me hoping to make the interview itself more captivating for them by including some interesting facts and stories and therefore providing an even greater amount of inspiration.

Each participant has agreed to the date, time and the meeting place for the interviews, and subsequently, I traveled to the University of Strasbourg to get the technical materials and equipment for carrying out the video interviews: such as, a professional video camera, wireless bodypack microphones, a microphone, and a tripod. After I got access to all the technical equipment, I needed to manage it on my own and set it up for its purpose in the course of just three days. For instance, in the case of the Sennheiser SK 100 G4 wireless bodypack microphones, it was imperative to learn the main controls, how to synchronize the channels, and how to check the connection to the Sony professional video camera.

During this process, I also sought and found the best video editing software, and within a week, I mastered the fundamentals of video editing in Adobe Premiere Pro and designed graphics using Canva.

Once the video interviews were completed, I used Adobe Premiere Pro to edit them, preserving their quality. Then, once the video files were transferred to Canva, I edited them, creating storytelling and adding transitions and animations.

Concerning transitions, animations, and background music, I tried to remain faithful to the format used for the videos already on Master CAWEB's YouTube channel.

Once the final product was obtained, it was uploaded to the Master CAWEB YouTube channel. I used generative artificial intelligence systems and a prompt

framework to create detailed, SEO-optimized descriptions. The next step was to review the texts carefully, verifying that the information was accurate and consistent.

I created ad hoc posts for LinkedIn and Instagram to sponsor the video interviews. Specifically, regarding LinkedIn, I tagged the interviewees; in one case, one shared the post on their profile. This led to an exponential increase in views and interactions and significant visibility on a professional level for the person concerned herself.

YouTube is the social media platform where SEO is most effective. The descriptions of each video contain information about the person interviewed, professional and academic background, CTAs such as the following 'Like the video, subscribe to our YouTube channel and take a closer look at our UX Design Specialization  <https://mastercaweb.unistra.fr/en/ux-design-specialization/curriculum/>,' list of social media where Master CAWEB is present, subtitles added not automatically with YouTube Studio. The primary keyword was used in both title (approximately 45 characters) and description.

Regarding data and statistics, 150 views were exceeded; in one case in particular, views were over 275 three weeks after uploading to YouTube. More in detail: Impressions 2.0 k, Click Through Rate (CTR) 11.2 %, Vues 276 (196 more than usual for the YouTube channel Master CAWEB).

A significant action is to share and reshare content to reach a wider audience, and this is what happened with the video with the most views. Both the interviewee and another LinkedIn user performed this action. Results include increased visibility for the interviewee, especially in the professional sphere due to quality content (sharing, 25 reactions, re-sharing by third parties), increased user interaction (10 more followers for the CAWEB Master YouTube channel).

Feedback and Recommendations

With the same dynamism with which technology and computing evolve and grow, companies and everything connected to them must also adapt to these changes.

As of August 2024, students, instructors, and academic staff of the Master CAWEB program are actively preparing to welcome new students for the 2024/2025 academic year. Based on feedback from prospective students, a series of necessary actions are being developed, focusing on revising the entire Master CAWEB website structure, its textual and multimedia content, and its SEO. This leads to a critical reflection: while a more mature individual might find it easy and intuitive to navigate the various sections of a website, younger generations might have different experiences. Equally important are the quality and tone of the textual content, which play a crucial role in gaining the target audience's trust. Dynamic elements, innovative content such as QR codes, and chatbots could also enhance engagement and achieve these goals.

Among the unique characteristics of the CAWEB Master's program is its staying true to itself while evolving. With a broad international scope thanks to multilingual courses of study focused on translation and localization, web development, and project management, the Master's looks to the present and the future thanks to a series of European and international partnerships because alone we go forward, but together we go far.

During the internship experience, the in-person experience in Strasbourg, and the distance work experience, focused on handling all aspects regarding the management of working teams and the online curation and promotion of the CAWEB Master, I was able to appreciate this opportunity for further growth. In fact, I had the chance to apply in practice the theoretical skills acquired during the academic year.

Social media management allowed me to create digital marketing strategies, especially on LinkedIn and Instagram, in English: choosing the target audience, creating a communication strategy and developing text and multimedia content, and analyzing metrics were important steps to increase brand awareness and, thus, the digital identity of the CAWEB master's in international users.

Preparing interviews in person and remotely, using professional video editing and editing equipment and programs, liaising with different university departments, and

sharing published material in the form of text and video allowed me to collaborate closely with eminent members of the University of Strasbourg, adhering to what is the mission of internationalization in respect of the core values of this important academic institution.

At the same time, coordinating and collaborating with different teams to create digital content and improve the English-language CAWEB Master website allowed me to test my organizational skills. Task planning, monitoring and time management, ability to adapt to unforeseen events, but also a certain flexibility and listening skills were crucial aspects for the success of the various tasks and the achievement of the set goals.

In summary, this experience led me to a significant professional awareness, for which it was necessary to resort to and make balanced use of creativity, listening and communication skills and, finally in order of importance, discipline.

Aligned with one of the fundamental characteristics of the CAWEB Master's program, this internship experience provided a bridge between study and professional practice and is a testament to the validity of this curriculum and how, as challenging as it can be, it provides students with all the skills they need to spend in the job market.

Part 3: Content Creation and Ethics in Digital Age

Digital Marketing 5.0

Generative AI and Ethics

“Use of artificial intelligence in enterprises” Eurostat article mentions that in 2023, 15 per cent of small & medium-sized enterprises, and 42 per cent of European large enterprises were already using artificial intelligence in various fields. Thus, certain tendencies can be observed with respect to countries in Northern Europe (higher adoption rates) and Southern Europe (lower rates).

Another noteworthy aspect is the less effective application of artificial intelligence by organizations that participated in the survey. Among the reasons provided by respondents for these challenges, 57% mentioned a shortage of skills and qualified staff, whereas 46% mentioned Due to the high cost of implementation.

In the perspective of the present study, an emphasis should be placed on the fact that younger generations should be sufficiently trained and further, the skill level of adults should be brought up to date¹⁷.

Responsible Artificial Intelligence and the European Strategy for the Digital Age

Referred to as the “Europe Fit for the Digital Age,” the said strategy is meant to guide Europe in its desire to transform its continent into the digital era. This strategy looks primarily at the digital sales approach and ends with artificial intelligence that is placed appropriately in context. The Commission has a favorable view of artificial intelligence; it attributes this technology to the ability to tailor marketing strategies and facilitate communication with users and clients. A noteworthy status relating to the employment of artificial intelligence by organizations reveals that it is on an upward trend- in 2020, only 7% of European organizations used it.

¹⁷ “Use of Artificial Intelligence in Enterprises - Statistics Explained.” 2023. Europa.eu. 2023, accessed 02 August 2024, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Use_of_artificial_intelligence_in_enterprises#Types_of_AI_technologies_used.

The European Regulatory Framework: DMA, DSA and the AI Act

In 2022, the European Union legislated the Digital Markets Act (DMA) and the Digital Services Act (DSA). They allow everyone fair play in the digital market, setting the EU's position in fairness to all.

This development was encouraged by the European Commission, which passed the AI Regulatory Framework Policy or AI Act Implementing Date of August 1, 2024. This policy evaluates AI applications in terms of potential threats to enhance their use in the context of digital marketing.

An ambitious target, which will be consigned to 2030, holds that at least 80 percent of the European population shall be provided with basic digital skills necessary for digital marketing and artificial intelligence. This shows the Commission's commitment to ensuring digital literacy for everyone.

Rules with regards to how artificial intelligence systems can be used within Europe have been brought about by the European Union in the form of the AI Act.

This regulation is the first ever in the world to address the safety of users. Moreover, the same has also been adopted by the European Union within its digital strategy¹⁸.

AI should be restrained for the purpose of creating a more favorable environment for growth of such disruptive technology and enhancing user protection. Surely, there are a lot of positive things associated with the use of artificial intelligence in various fields. For instance, one may talk about pharmaceutical sciences, medicine, level public transport systems, and such technologies in markets that aim to decrease energy consumption in manufacturing and business. Like all other new technologies, artificial intelligence also has risks.

¹⁸ European Commission. 2024. "Regulatory Framework on AI | Shaping Europe's Digital Future." European Commission. March 6, 2024, accessed 02 August 2024, <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai>.

This European legislation dates to late 2021 when the European Commission proposed the first European Union Framework for Artificial Intelligence.

This proposal is intended to state that artificial intelligence systems can certainly be used in various applications, and it is important to evaluate and rank them according to the risks they may pose to users. Contextually, work has been done to develop a list of risk levels, graphically represented as a pyramid at the top of which is the riskiest group of artificial intelligence systems, while at the bottom are the least risky ones.

The European Parliament's main priority objective was to ensure that artificial intelligence systems deployed in the European Union were guaranteed to be safe, transparent, traceable, non-discriminatory, and environmentally friendly, especially in terms of content generation.

For these reasons, all artificial intelligence systems must be supervised by humans.

The European Parliament has identified one of its primary objectives as establishing a consistent definition of artificial intelligence, which would be used for all upcoming AI systems.

Not all artificial intelligence systems are identical. Some present minor potential risks to users, while others present more significant likely risks.

For this reason, there are two primary risk groups: unacceptable risk and high risk.

Artificial intelligence systems that go into the group of unacceptable risk are those that allow facial recognition through direct or remote biometric identification and categorization of groups of people (Social scoring), i.e., classifying groups of people based on behavior socioeconomic status and personal characteristics, cognitive behavioral manipulation of people or groups of people with specific vulnerabilities to give a practical example. The European Parliament cited children's toys that can be activated by voice recognition and, therefore, may incentivize children to engage in dangerous behaviors.

High-risk AI systems are those that can affect the fundamental rights, security, and ability of human beings to make fair decisions. AI systems that fall into this risk category must be subject to very strict compliance controls. Areas of use for this type of AI include medical devices used in health care such as diagnostic devices, in public spaces for example facial recognition systems for public surveillance purposes, in public and private transportation, and in education.

In addition, the use of AI to produce images and related materials or AI that includes deepfakes, all sounds, videos and images that make use of Artificial Intelligence, is regulated so that all such media products must be so marked in the context of AI images.

In June 2023, the European Parliament adopted the AI Act, and in 2024 it was approved by the Council of the European Union. On August 1, 2024, the AI Act officially entered into force and represents the first regulation of artificial intelligence systems in the world. The 24 months following August 2024 will be used to allow organizations and companies to comply with European regulations and take action to make improvements to relevant laws. In addition, it is expected that the timelines for taking action on AI systems deemed to be at high and unacceptable risk will be significantly reduced to ensure efficient implementation of the AI Act.

Most international corporations voice general support for the integration of artificial intelligence in work processes. Among them is IBM, which has expressed its commitment to the use of artificial intelligence for the welfare of mankind rather than the privilege of the few and adopts core values¹⁹ of trust and transparency. There are companies developing artificial intelligence, and they must explain who elaborates the actual data that trains their AI systems and the actual factors that, in one way or another, influence their recommendations. There is a need for generative artificial intelligence to be comprehensible before it can be relied on to make important decisions²⁰.

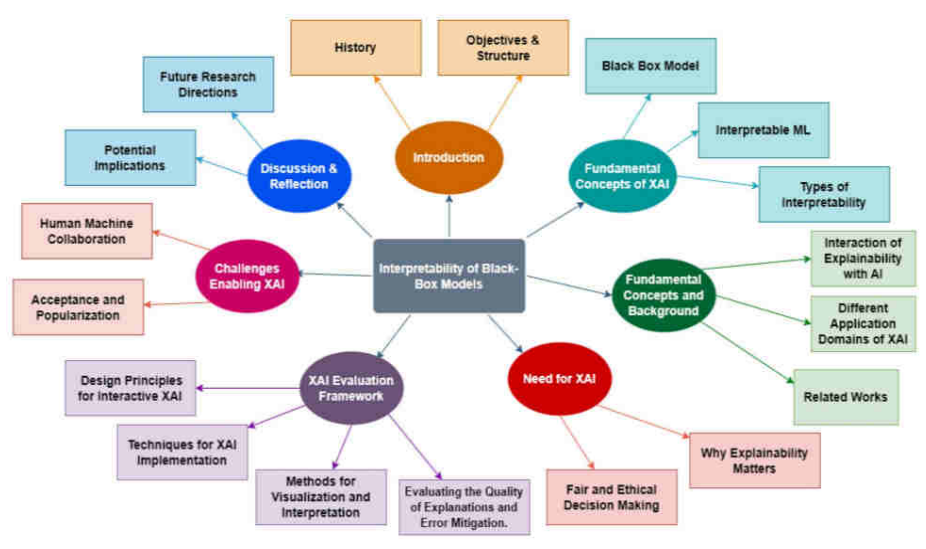
¹⁹ "Etica Dell'AI | IBM." 2024. Ibm.com. 2024, accessed 03 August 2024, <https://www.ibm.com/it-it/impact/ai-ethics>.

²⁰ "Trust Transparency." n.d. IBM Policy, accessed 03 August 2024, <https://www.ibm.com/policy/trust-transparency-new/>.

EXplainable artificial intelligence (eXplainable AI or XAI) relates to the methods that guide the user on how the artificial intelligence system functions so that confidence in the decision made is developed. Explainable artificial intelligence works within the framework of transparency (there is an audit trail for the decisions that are made, which is fully understandable and explainable every step of the way). Traditional artificial intelligence, on the other hand, is defined as a “black box” where decisions are made with little understanding of the inner workings.

This term suggests that the logic of artificial intelligence, the “black box,” is poorly understood: a certain input may yield the required output, but users do not know the processes involved in coming up with that output. The new European Union AI act unavoidably issues some steps seeking reasons for advancing out of this black box, thereby creating an opportunity for users. Publishing models for public use is one way of making AI development activities transparent to the public. However, one pending threat that should be dealt with is revealing data and algorithms that could endanger the safeguard of property and competitive benefits pertaining to most companies. To put it another way, in a report, “a black-box model in XAI refers to a machine learning model that operates as an opaque system where the internal workings of the model are not easily accessible or interpretable.”²¹

²¹ Hassija, Vikas , Vinay Chamola, A Mahapatra, Abhinandan Singal, Divyansh Goel, Kaizhu Huang, Simone Scardapane, Indro Spinelli, Mufti Mahmud, and Amir Hussain. 2023. “Interpreting Black-Box Models: A Review on Explainable Artificial Intelligence.” *Cognitive Computation* 16, no. 1 (August). <https://doi.org/10.1007/s12559-023-10179-8>, 47.



Source: Fig. 1 Overview of the survey - Chakravorti, Bhaskar. 2024. "AI's Trust Problem." Harvard Business Review. May 3, 2024. <https://hbr.org/2024/05/ais-trust-problem>.

According to IBM's statement, artificial intelligence must be explainable to anyone, adhering to the principles of fairness and impartiality, which are applicable in several important areas, including health care, financial services, and criminal justice.²²

Asana and "The State of AI At Work" report

Asana, the work management app that aims to take over, released "The State of AI At Work" report²³ online on June 5, 2024. This paper emphasizes the role of artificial intelligence in the office and was prepared by Asana's Work Innovation Hub²⁴ in cooperation with US-based AI development start-up Anthropic.

Asana's Work Innovation Lab in March 2024 surveyed 5007 employees in companies and organizations in the USA and UK. The studies were carried out with the use of the Qualtrics survey tool, and the Prolific platform collected the sample data. The aim was not addressed to the clients of Asana nor to its employees. One

²² IBM. 2024. "What Is Explainable AI? | IBM." IBM. 2024, accessed 02 August 2024, <https://www.ibm.com/topics/explainable-ai>.

²³ Asana. 2024. "Asana." Asana. 2024, accessed 03 August 2024, <https://asana.com/it/resources/state-of-ai-work>.

²⁴ "Home - the Work Innovation Lab." 2023. The Work Innovation Lab. June 15, 2023, accessed 03 August 2024, <https://asana.com/work-innovation-lab>.

more purpose was to understand if and how many companies have a formal plan for implementing artificial intelligence and, if they do, what its coverage is.

The document provides the types and complete working chain of artificial intelligence integration at the workplace, including a component labeled '5 Cs': Comprehension, Concerns, Collaboration, Context, and Calibration.

Each of the "5 Cs" of this framework and holistic strategy represents a key area that companies should focus on for the adoption of artificial intelligence:

1. AI Comprehension: More than 56 percent of employees surveyed said they approached AI tools independently, through pure independent experimentation. Companies must invest time and resources in staff training and upgrading their employees' AI knowledge.
2. AI Concerns: According to 69 percent of employees surveyed, companies must use artificial intelligence tools that meet reliability and security requirements.
3. AI Collaboration: 33 percent of respondents said they had a positive opinion regarding artificial intelligence systems. Companies should invest in collaborative artificial intelligence systems, which do not replace humans but enable a collaborative approach.
4. AI Context: A mere 13 percent of the companies involved in the study have formalized guidelines for using artificial intelligence.
5. AI Calibration: 41 percent of companies do not survey employee feedback on using artificial intelligence in the work context.

Journey to AI maturity

The five "Cs" of AI adoption	Stage 1: AI Skepticism	Stage 2: AI Activation	Stage 3: AI Experimentation	Stage 4: AI Scaling	Stage 5: AI Maturity
Comprehension	Limited awareness of AI's potential and functionality.	Recognition of AI's growing capabilities, sparking early interest.	Deep exploration of AI's advanced applications and limits.	Comprehensive understanding of AI's role across workflows.	Expert-level proficiency in leveraging AI for strategic advantage.
Concerns	High skepticism due to unfamiliarity, questioning AI's reliability.	Fear of AI replacing human effort, raising authenticity concerns.	Ethical concerns focus on data privacy and bias.	Excitement about AI's benefits is balanced with awareness of potential risks.	Focus on sustainable and ethical AI practices.
Collaboration	AI is used primarily as a functional tool.	AI remains a support tool, showing potential as a teammate and consultant.	AI is considered a collaborative partner in projects.	AI is increasingly seen as a teammate and consultant.	AI is recognized as an essential strategic consultant and teammate.
Context	Organization lacks defined AI strategies or ethical guidelines.	Organization develops preliminary guidelines for AI application.	Organization formalizes AI usage policies and ethical standards.	Organization establishes AI governance and operational frameworks.	Organization fully integrates AI governance into business strategy.
Calibration	Sporadic and unstructured attempts to measure AI's impact.	Organization begins leveraging employee feedback to assess AI's impact.	Organization launches systematic measurement of AI's effectiveness.	Organization creates feedback loops within departments and adopts holistic AI metrics.	Organization establishes consistent feedback loops and adopts advanced reporting on AI metrics.

Journey to AI maturity. Source: Asana. 2024. "Asana." Asana. 2024. <https://asana.com/it/resources/state-of-ai-work>.

According to this report, the generative artificial intelligence tools are being embraced by companies and organizations at a constant pace with at least 52% of the workers using the same at least once in a week. The adoption of generative artificial intelligence tools had a favorable impact on productivity, with 89% of productivity being achieved by those who used AI every day.

As it concerns the fears of management, only 31% of businesses were able to take a strategic view in the deployment of AI, while 64% of the participant said that they did not know any of these tools.

Acknowledging that the incorporation of artificial intelligence and other tools will become an integral part regardless of the working world, companies and organizations ought to hurry in trying to lap this area and invest in it. Likewise, spending on employee training and education, incorporating tools of artificial intelligence into the normal operation processes of the organizations, making sure that they are safe and efficient, and formulating policies regarding the use of these devices and systems are important for competitiveness.

The Full-Stack Marketer

A full-stack marketer is a well-rounded expert in the Digital Marketing sector. Like a full-stack developer with proficiency in front-end and back-end development, a full-stack marketer is an experienced individual with diverse skills. Commonly, these skills include:

- Digital Marketing: Search Engine Optimization (SEO), Pay per click (PPC) campaigns, Marketing, Social Media Marketing (SMM), Email Marketing.
- Content creation includes writing, design, and video production.
- Analytics refers to data analysis, Google Analytics, and A/B testing.
- Project management is another essential area.
- Tools and Software.

Several benefits come with being a full-stack marketer. First, it is a multifaceted, full-stack professional who has full command of a range of skills required by the marketing industry. Plus, work and career opportunities are diverse. As a result of soft skills such as flexibility and adaptability, the full-stack marketer can handle one or more different tasks within a few days or weeks, manage small marketing teams by delegating projects divided into milestones to make effective management of even complex tasks, and take decisions after analyzing data and results obtained from marketing campaigns.

Above all, the full-stack marketer must be naturally curious and predisposed to change. Therefore, it is of utmost importance that full-stack marketer upgrades their skills in generative artificial intelligence, learn to master the key related tools, and know how to integrate them into the workflow²⁵.

²⁵ "Brenna Kelly." 2024. SEMrush Blog. 2024, accessed 05 August 2024, <https://www.semrush.com/blog/full-stack-marketer/>.

The Role of AIO Content Writers

The digital landscape is changing rapidly, with innovations appearing every day. In continuous evolution transformation, artificial intelligence also becomes directly involved in the digital content manager. Among the emerging professional figures is the AIO content writer.

The AIO content writer is responsible for writing and revising content previously generated by querying from artificial intelligence software, giving instructions (prompts²⁶) written by the content writer querying the artificial intelligence software.

Artificial intelligence optimization (AIO) can also be said to be the human process of improving and editing content, primarily textual, generated by artificial intelligence so that it appears to have been produced by a human expert mind, in line with what the editorial lines, such that it is perceived by the reader as entirely written by a human mind. Make sure the content is optimized for search engine optimization (SEO), check that the facts in the text are accurate and truthful, and then ensure the sources are reliable and of high quality. Ensure that the tone of voice reflects the personality of the brand or website or otherwise of the employer, and make sure that the content is engaging to the reader and directed to the target audience.

It is a minefield because it is an absolute novelty in the Publishing Panorama. Not only do AIO models have pros and cons, but they also have advantages and disadvantages.

Among the advantages, simplification of the process of textual content development, significant reduction of costs for content creation, and improvement of the results obtained, thanks to the collaboration of artificial intelligence.

²⁶ Cambridge Dictionary. 2019. "PROMPT | Meaning in the Cambridge English Dictionary." Cambridge.org. 2019. <https://dictionary.cambridge.org/dictionary/english/prompt>. 'prompt *verb* [T] (COMPUTER) to give an instruction to an artificial intelligence (= a computer system or machine that has some of the qualities that a human brain has, such as the ability to interpret and produce language in a way that seems human, recognize or create images, solve problems, and learn from data supplied to it) using natural language rather than computer language'.

More precisely, artificial intelligence software can analyze a considerable amount of data in very few seconds. This helps the writer overcome obstacles, such as the fear of not knowing enough about a topic and thus reduces the time needed to search for useful sources for writing, such as an article's text content.

As a result, you get content creation and publishing five between 5 and 10 times faster than average.

Search Engine Optimization should not be neglected; therefore, artificial intelligence can be queried for initial text optimization. Obviously, humans are in charge of making sure that the text is consistent, fresh, and of quality.

Remarkably, the expenses associated with creating content have significantly decreased.

Whereas in the past, a Digital content writer used to spend over 4 hours on average to write an article, it is one between two hours to revise the article for a total of about 6-8 hours of work. Instead, with the new AIO model, artificial intelligence can write about 2,000 words based on a keyword. In 5 to 10 minutes after that, the writer edits, cleans, and optimizes the article, which takes one to two hours for a total of one to two hours of work²⁷.

These two models have notable differences.

²⁷ Crestodina, Andy. 2019. "[New Research] How Has Blogging Changed? 5 Years of Blogging Statistics, Data and Trends." Orbit Media Studios. Orbit Media Studios. October 15, 2019, accessed 06 August 2024, <https://www.orbitmedia.com/blog/blogging-statistics/>.



SEO Writer VS AIO Writer. Source: AI vs. AIO content: The Pros and Cons of Using an AIO Writer - [AI vs. AIO content: The Pros and Cons of Using an AIO Writer \(ranktracker.com\)](https://www.ranktracker.com/blog/ai-vs-aio-content-the-pros-and-cons-of-using-an-aio-writer)

An additional major task of the AIO-oriented digital content writer is humanizing content while ensuring consistency and quality. To create optimized content, it is necessary to acquire a solid foundation in prompt engineering, know the main prompt frameworks, and know how to deploy such frameworks.

Disadvantages, on the other hand, include the lack of personalization and absolute certainty of content genuineness, the risk of plagiarism, and the failure to adhere to brand identity in AI-generated content.

It is necessary to check artificial intelligence-generated content by ensuring reliable and quality sources. For this reason, the AIO writer must be an area expert who masters these new skills and is scrupulous in checking artificial intelligence-generated content.

Challenges in AI-Generated Content

As a risk, the AIO writer needs to possess sufficient skills to check the actual quality of the work and adequate expertise to verify the sources.

Like textual and multimedia content entirely created by humans, content generated by artificial intelligence software must be plagiarism-free.

Several strategies can be employed to ensure that such content is plagiarism-free, including using anti-plagiarism software- to name a few, Scribbr²⁸ and Grammarly²⁹, the Google³⁰ search engine to search for possible copies of portions of text. The use of the human mind can only partially be replaced by artificial intelligence software.

Skilled AIO editors possess the right expertise to identify inaccuracies or misleading statements that may have been incorrectly generated by artificial intelligence; this is identified by the term “artificial hallucination.” The term 'artificial hallucination'³¹ applies to textual or multimedia content generated by artificial intelligence software that is meaningless or completely inaccurate. Artificial intelligence algorithms can generate inaccurate or completely incorrect results that are not based on training data. This is relevant when an artificial intelligence model has been trained on erroneous or biased data sets, which can produce unrepresentative, inaccurate, biased or even harmful results.

Therefore, it is increasingly important to employ an AIO content writer with significant prior experience to detect grammatical errors, distorted or untrue information, and dangerous content. In other words, AIO content writers must possess up-to-date skills on the virtuous use of artificial intelligence.

Another critical aspect of the AIO content writer's work is maintaining the tone of voice and personality of the brand they work for. Otherwise, there is a risk of making the content uncredible, not reaching the target audience, and creating text content identical to that of potential competitors. Added to this are the directives imposed by the European Artificial Intelligence Act (AI Act)³², whereby all multimedia

²⁸ “Plagiarism Checker for Students | in Partnership with Turnitin.” n.d. Scribbr. <https://www.scribbr.com/plagiarism-checker/>.

²⁹ Grammarly. 2019. “Plagiarism Checker by Grammarly.” Grammarly.com. 2019. <https://www.grammarly.com/plagiarism-checker>.

³⁰ Google. 2024. “Google.” Google.com. Google. 2024. <https://www.google.com/>.

³¹ “What Are AI Hallucinations? | IBM.” 2023. Ibm.com. September 2023, accessed 10 August 2024, <https://www.ibm.com/topics/ai-hallucinations#:~:text=AI%20hallucinations%20are%20when%20a%20large%20language%20model>.

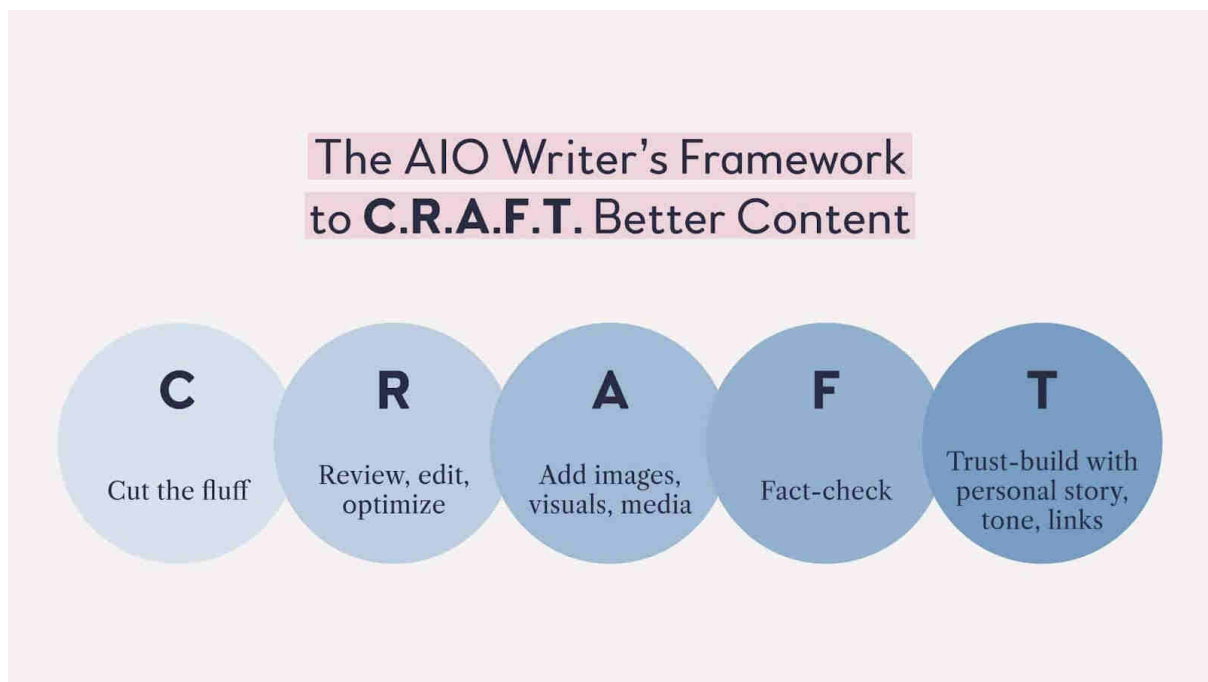
³² European Union. *Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying Down Harmonised Rules on Artificial Intelligence and Amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act). * Official Journal of the European Union L 1689, July 12, 2024. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=OJ:L_202401689.

content—audio, video, deepfake, primarily—generated by AI must be reported appropriately.

The AIO content writer cannot simply copy, paste, or publish content generated by artificial intelligence systems.

The C.R.A.F.T. Framework

Labor limae remains essential. More and more, multiple steps are required to prepare AI-generated blogs for publication. Among the most popular and highly recommended frameworks is C.R.A.F.T.³³.



The AIO writer's framework to C.R.A.F.T. better content. Source: [AI Blog Writing Tutorial: Use C.R.A.F.T. to Produce Amazing Blogs \(contenthacker.com\)](https://contenthacker.com)

The following explains in detail what the acronym C.R.A.F.T. means in prompt engineering.

³³ "Step-By-Step AI Writing Tutorial with C.R.A.F.T." 2023. Content @ Scale. March 23, 2023, accessed 06 August 2024, <https://contentatscale.ai/blog/ai-writing/>.

Cut the fluff (C): The first step is crucial, as artificial intelligence systems often generate text content, including repeated single words or superfluous sentences, digressions on the topic, technical jargon that is hard for the audience to understand, and exceedingly long or verbose sentences. The risk is to annoy readers, leading them to give up reading further.

Review, edit, optimize (R): The process involves a complete review of each element's titles, text, and text part. Titles and section names must be appropriate to the content and contain the keywords in the text's body. Excessively long sentences need to be shortened by removing superfluous parts or breaking them into more straightforward periods, optimizing the content for SEO purposes, and observing the hierarchy of title headings, notably main title H1, headings H2, and H3. They are inspecting for grammatical and spelling errors. Grammar and spelling errors constrain readers' understanding of the text and undermine the brand's reputation.

Add images, visual content, and multimedia (A): Visual components to be included are images, photos, infographics, maps, charts, tables, and multimedia content such as videos and audio files. Alternate paragraphs employ multimedia content in line with the brand identity, enriching the article with immediately appealing details and making it easier for the user to read. Ideally, such content should be authentic photos, infographics, videos, and audio representing the brand.

Fact Check (F): Verification of facts and sources has always been an essential step in disseminating information.

Fictitious facts lead to loss of trust in readers and also create considerable problems in extreme cases. Verifying the trustworthiness of sources and the truthfulness of the information given is essential. Trustworthy sources include certified news websites, international newspapers, official documents and reports, and accredited experts, while untrustworthy sources include social media, unverified news sites, and anonymous and unverifiable sources.

Trust-build (T): Building trust with stories, tone of voice, and personal connections.

To persuade users of a Brand's authenticity, it is of utmost importance to leverage storytelling—in other words, to tell a story that users can identify with. It's essential to focus on the specific words chosen, the tone of voice, and the overall style of the content. Additionally, incorporating internal links to your site and related content is essential for effective SEO optimization.

The Evolution from SEO to Generative Engine Optimization (GEO)

Artificial intelligence's growth and increased availability have led to significant shifts in digital marketing. Both theoretical and practical knowledge of artificial intelligence is among the must-have skills in the 'toolbox' of any reputable digital marketer. Introducing artificial intelligence into digital marketing has created a groundbreaking change in how we communicate and market our products. Thanks to predictive algorithms, the processes of personalizing content, user paths in mobile-friendly applications, and messages have faced an unprecedented acceleration³⁴.

Search engine optimization (SEO) has always been about ranking websites at the top of search engine results. With the advent of AI comes the rise of Generative Engine Optimization (GEO).

Generative Engine Optimization (GEO) implements large language models (LLM) to synthesize information from multiple sources. It is designed to help digital content managers create content by improving the visibility of their websites in the responses provided by generative search engines (GE). GEO is an intelligence-enhancing technology that leverages and customizes various sources of information.

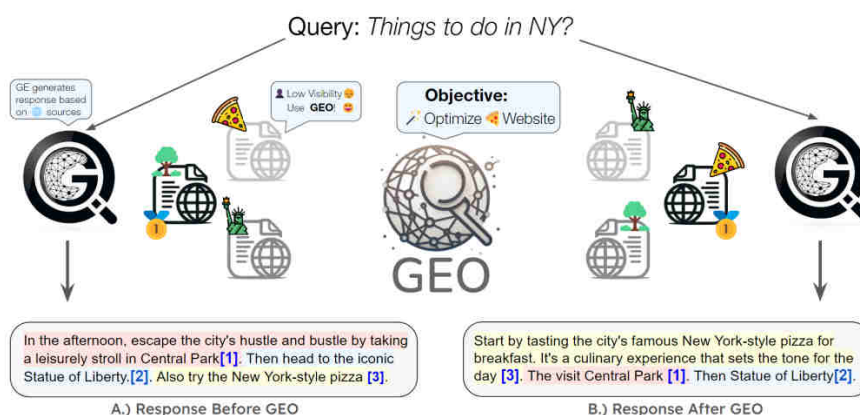
This is a new way of doing Search Engine Optimization which is both a turnaround in the field of communication and technology and has far reaching effects to content creators and developers of generative engines.

³⁴ Giannini, Federico. 2024. "L'avvento Dell'AI Nel Marketing: Le Tendenze Che Cambiano Tutto." Agenda Digitale. Agenda Digitale. April 8, 2024, accessed 07 August 2024, <https://www.agendadigitale.eu/mercati-digitali/lavvento-dellai-nel-marketing-le-tendenze-che-cambiano-tutto/>.

Two significant aspects that differentiate SEO and GEO:

- The term SEO is associated with the acquisition and accumulation of backlinks, ranks, or simply optimizing the position of sites on Page Search Engine Results Pages (SERP).
- GEO, in this regard, includes cognitive abilities such as LLM, which collates information from various sources and generates a coherent message in response to a specific query. It aims to improve the output rather than the usage of the input by embedding a specified link in the sources.

Generative Engine Optimization (GEO) refers to the process of modifying or reengineering the website content so as to improve the ranking and relevance of the website in Generative engine responses. The black box optimization framework G.O.E below demonstrates a GEO tactic, which directs subscribers to a low-visibility pizza vendor website to enhance its generative engine relevance. In the general framework of GEO, the content creators can set and optimize their own visibility parameters. These are usually moderation and interventions as well.



Before and after Generative Engine Optimization. Source: Pranjal Aggarwal et al., "GEO: Generative Engine Optimization," Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD '24), August 25-29, 2024, Barcelona, Spain. ACM, New York, USA, page 2. <https://arxiv.org/pdf/2311.09735>

Extensive analysis and comparison of SEO and GEO models reveals the following:

- The practice of SEO has as one of its goals the increase of organic traffic not augmented by advertising activities and increases its visibility.
- SEO combines all practices of optimizing websites and content to bring them on the top of traditional search engine results pages.
- SEO is a technique for yielding search results based on designated keywords, and it is optimized for mainstream search engines, including Google.
- User engagement metrics, such as time spent on a page and click-through rate, are important for evaluating the success of an SEO strategy.
- GEO aims to ease AI's ability to detect content, ensure accurate interpretation, and deliver it in response to user queries and requests.
- GEO is designed for artificial intelligence-based search, for example, Google Search Generative Experience (SGE), BingChat of Microsoft, and, in the future, ChatGPT's search engine.
- Quality of citations and relevance to user queries are the two important elements in GEO^{35 36}.

Millions of users have used generations of engines, but a standard framework has yet to emerge in mid-2024.

It is possible to provide a formulation that considers various modular components during design. It describes a generation engine with multiple backend generation models and a search engine for source retrieval. The generative engine (GE) receives a query from the user q and returns a natural language response r . The PU here represents the user's personal information. GE can be expressed as a function³⁷:

³⁵ OpenAI. "SearchGPT Prototype." *OpenAI*, accessed August 25, 2024, <https://openai.com/index/searchgpt-prototype/>.

³⁶ Saragaglia, Francesca. 2024. "GEO, Generative Engine Optimization, Cos'è E Come Funziona." *Fastweb Plus*. FASTWEB-PLUS. June 29, 2024, accessed 06 August 2024, <https://www.fastweb.it/fastweb-plus/digital-marketing-social/geo-generative-engine-optimization-cose-e-come-funziona/>.

³⁷ Aggarwal, Pranjali, Vishvak Murahari, Tanmay Rajpurohit, Ashwin Kalyan, Karthik Narasimhan, and Ameet Deshpande. n.d. "GEO: Generative Engine Optimization." <https://arxiv.org/pdf/2311.09735>.

$fGE := (qu, PU) \rightarrow rfGE := (qu, PU) \rightarrow r$

Understanding Deepfakes

With the election campaign for the next president in August 2024 in the United States of America ongoing and given the recent events that have made international headlines^{38 39}, the online debate on using deepfakes and artificial intelligence-generated content has been inflamed. It's important to avoid mixing deepfakes with cheapfakes.

- Cheapfakes consist of photographic, audio, and video content manipulated with less cutting-edge and more dated tools. These include a professional retouching program such as Photoshop—hence the term 'photoshopped.'
- Deepfakes are photographic, audio, or video content created or altered by leveraging artificial intelligence⁴⁰.

Case Study: “In Event of Moon Disaster”

Deepfakes can be considered like fakes. Not unusual has been the cases of involvement of celebrities from the worlds of music, film, and politics who found themselves suddenly involved as victims of manipulation of photo, audio, and video material in which they were portrayed by artificial intelligence; material posted on

³⁸ Wagmeister, Elizabeth, and Kate Sullivan. 2024. “Trump Posts Fake AI Images of Taylor Swift and Swifties, Falsely Suggesting He Has the Singer’s Support.” CNN. CNN. August 19, 2024, accessed 23 August 2024, <https://edition.cnn.com/2024/08/19/politics/donald-trump-taylor-swift-ai/index.html>.

³⁹ Luca Tremolada. 2024. “Dai Deepfake Di Taylor Swift Alle Fake News Con ChatGpt: Come Difendersi Dalla Disinformazione ...” *Il Sole 24 ORE*. *Il Sole 24 ORE*. August 21, 2024, accessed 23 August 2024, <https://www.ilsole24ore.com/art/dai-deepfake-taylor-swift-fake-news-chatgpt-come-difendersi-disinformazione-elettorale-AFi8RgTD>.

⁴⁰ Eliot, Lance. 2024. “Explaining Deepfakes versus Cheap Fakes and the Role of Generative AI.” *Forbes*, July 2, 2024, accessed 23 August 2024, <https://www.forbes.com/sites/lanceeliot/2024/06/25/cheap-fakes-and-rescuing-humankind-via-generative-ai/>.

social media and promptly brought to the headlines by significant internet news sites⁴¹.

In 2019, Francesca Panetta, creative director of the Center for Virtuality at MIT, and Halsey Burgund, a fellow at the MIT Open Documentary Lab, established a collaboration with Canny AI and Reespecher, two companies at the forefront of artificial intelligence-related technologies. Panetta and Burgund's idea was to create an art installation but also a product with a pedagogical intent: leveraging the opportunities offered by artificial intelligence systems would create something mind-blowing, as indeed deepfakes; at the same time, it represents a double-edged sword and can be used for virtuous purposes, for the benefit of humanity, or in a dangerous way. In 2019, it was screened at the International Documentary Film Festival Amsterdam (IDFA)⁴².

The story covered needed to be taken from an actual event that happened and was worldwide significant. For these reasons, the 1969 Apollo 11 moon landing was chosen as the historical event, aiming to re-enact it, but twisting the narrative.

It is important to point out that Richard M. Nixon, the 37th president of the United States, had prepared two speeches long before the Apollo 11 mission, which was aimed at landing the first men on the moon. Only one of these two speeches was meant to be addressed on live television: one for a successful mission and the other for a tragic event, "In Event of Moon Disaster"⁴³.

Panetta and Burgund selected the prepared and unread speech "In Event of Moon Disaster" and created a deepfake based on the audio and video materials available to them.

To create the deepfake, Panetta and Burgund needed an actor. They sought one willing to risk it all to play President Nixon. The two companies involved, Canny AI and Respeech, would be responsible for using technology to replace the actor's mouth movements and voice in the video to make it more realistic. Ultimately, Lewis

⁴¹ Eliot, Lance. 2024. "Explaining Deepfakes versus Cheap Fakes and the Role of Generative AI." *Forbes*, July 2, 2024, accessed 23 August 2024,

<https://www.forbes.com/sites/lanceeliot/2024/06/25/cheap-fakes-and-rescuing-humankind-via-generative-ai/>.

⁴² IDFA. 2019. "IDFA 2019 | Trailer | in Event of Moon Disaster." YouTube. November 13, 2019, accessed 24 August 2024, <https://www.youtube.com/watch?v=nGWVn1xnMIg>.

⁴³ "BBC News | Sci/Tech | Full Text: Nixon's Unused Apollo Speech." 2024. *Bbc.co.uk*. 2024, accessed 24 August 2024, <http://news.bbc.co.uk/2/hi/science/nature/390933.stm>.

D. Wheeler was chosen to play Nixon, and he had to spend several hours training by reading his speeches to portray him as realistically as possible⁴⁴.

“In Event of Moon Disaster” is a didactic product. Panetta and Burgund's goals included creating a video and audio product for teachers and students to understand and protect themselves from manipulated media in the sea of advanced misinformation. The real threat comes from a lack of media literacy, which leads to difficulties in discerning true information from false and recognizing which news outlets are credible. Teachers are vital in educating themselves and sharing their insights with students. At the same time, students need to learn how to differentiate between what is true and what is false early.

Meanwhile, students must learn from the start to distinguish between what is true and what is false. They also need to grasp how to appropriately use artificial intelligence tools for content creation and to use them ethically. This task is long and complex. It includes studying media history and analysis and researching media in various contexts.

For the authors of the production, “deepfake” originates from the combination of 'deep learning' plus 'fake,' with the intent to deceive by simulating actions, statements, and requests from people that have not happened but are passed off as such. While “In Event of Moon Disaster” is the result of a combination of real people, i.e., a live actor who has volunteered to provide the human base to work on, and artificial intelligence-generated media, the easiest deepfake to create is the one that takes place by using the image of a person's face on the body image of another person, real or imaginary.

Strategies for Detecting and Countering Deepfakes

⁴⁴ “Inside the Strange New World of Being a Deepfake Actor.” n.d. MIT Technology Review, accessed 24 August 2024, <https://www.technologyreview.com/2020/10/09/1009850/ai-deepfake-acting/>.

The authors of "In Event of Moon Disaster" suggest four ways to tell a genuine media product from a deepfake:

- Historical awareness.
- Fine-grained interpretation.
- Contextual research.
- Co-creative production.

Historical awareness: Knowing the historical context and prior historical events is important for reconstructing facts correctly. By deduction and logic, it should be easy to tell whether one is dealing with a genuine product or a deepfake.

Fine-grained interpretation: Watching the video two or more times and noting any signs of manipulation or imperfections, such as the absence of blinking, visual anomalies, and abnormal facial features. This process can also apply to various media formats, including written content, images, and sound.

Contextual research: The third proposed modality is research through digital forensics, which involves using special software that analyzes multimedia content to detect possible computational manipulation. Among such software is FaceForensic⁴⁵. Applications such as Truepic⁴⁶ provide tools to help verify the genuineness of multimedia content online.

Co-creative production: groups create an ethical and oriented digital project for the public good, created based on research by selecting reliable sources. This type of group work stimulates learning, co-working, teamwork, the development of collective intelligence, and, finally, critical thinking.

⁴⁵ Rössler, Andreas, Davide Cozzolino, Luisa Verdoliva, Christian Riess, Justus Thies, and Matthias Nießner. n.d. "FaceForensics++: Learning to Detect Manipulated Facial Images." https://openaccess.thecvf.com/content_ICCV_2019/papers/Rössler_FaceForensics_Learning_to_Detect_Manipulated_Facial_Images_ICCV_2019_paper.pdf.

⁴⁶ Truepic. "Homepage." <https://truepic.com/>.

Part 4: Generative AI Prompt Engineering: Mastering the Art of AI Instruction

A New Paradigm Shift

The Role and Skills of a Prompt Engineer

The field of prompt engineering in artificial intelligence is concerned with developing adequate instructions. It prompts to guide artificial intelligence generative models, including ChatGPT, to generate targeted and accurate outputs. Trained on large amounts of data, artificial intelligence generative models 'understand' and generate text in a human-like manner⁴⁷. The output quality depends on the instructions provided, their completeness and relevance, and are known as prompts.

The skilled professional figure in prompt engineering is the prompt engineer, defined by the Washington Post as an “AI whisperer” and as one who “programs in prose.” In other words, the prompt engineer designs and writes “prompts,” instructions optimized for submitting queries to Large Language Models (LLMs), including ChatGPT-4 and Claude, built by the Californian startup Anthropic, to train the LLMs to perform certain tasks sharply and precisely. These tasks include translating and localizing text from one language to another while adhering to the cultural peculiarities of the target language speakers, generating SEO-optimized text content, and writing lines of code.

These are 4 indispensable skills of a prompt engineer. First, one should be a person who is curious, eager to know, and able to learn and apply new notions, especially in the field of technology. In addition, one must possess excellent text writing and

⁴⁷ “What Is Prompt Engineering? | IBM.” 2023. Ibm.com. November 27, 2023, accessed 11 August 2024, <https://www.ibm.com/topics/prompt-engineering#:~:text=Prompt%20engineering%20is%20the%20process%20of%20writing%2C%20refining>.

editing skills to create new prompt frameworks and edit work generated by artificial intelligence systems, as well as familiarity with the application domain. Fundamental is knowing how Large Language Models (LLMs) work and the basic mechanisms⁴⁸.

Defining Prompts: The Key to Effective AI Interaction

A prompt is “an instruction given to an artificial intelligence (= a computer system or machine that has some of the qualities that a human brain has, such as the ability to interpret and produce language in a way that seems human, recognize or create images, solve problems, and learn from data supplied to it) by a human using natural language rather than computer language⁴⁹.”

Prompt engineering is helpful in the following main areas:

- Health care: In the med-tech sector, prompt engineers craft ad hoc prompts to query artificial intelligence to collect medical data in an orderly manner and return helpful information for patients' treatment options as answers. It makes it possible to identify and create effective therapies individually tailored to each patient.
- Chatbots: create consistent and context-relevant responses so that the chatbot, when queried by users, can understand the requests and answer meaningfully. Software development: artificial intelligence models are leveraged to produce code snippets and provide answers to problems concerning software programming. This results in a significant reduction in work time and, in addition, is a valuable aid for developers in performing tasks.

⁴⁸ “Q&a with Albert Phelps: The Rise of the ‘Prompt Engineer’ and Why It Matters.” 2023. World Economic Forum. May 3, 2023, accessed 12 August 2024,

<https://www.weforum.org/agenda/2023/05/growth-summit-2023-the-rise-of-the-prompt-engineer-and-why-it-matters/>.

⁴⁹ Cambridge Dictionary. 2019. “PROMPT | Meaning in the Cambridge English Dictionary.” Cambridge.org. 2019.

<https://dictionary.cambridge.org/dictionary/english/prompt.-prompt-noun> [C] (COMPUTER) an instruction given to an artificial intelligence (= a computer system or machine that has some of the qualities that a human brain has, such as the ability to interpret and produce language in a way that seems human, recognize or create images, solve problems, and learn from data supplied to it) by a human using natural language rather than computer language: *As a beginner in prompt engineering, start with simple prompts and gradually move on to more complex ones. AI prompts are essentially commands that the AI model can understand.*

- Cybersecurity and information technology: the prompt engineer's job is to leverage artificial intelligence to recreate simulated cyber-attacks or security tests, identifying weaknesses to debug and design advanced security measures.
- Software engineering: The prompt engineer's job is to help generate tailored code snippets, identify and fix bugs, and design API integrations to facilitate and automate manual work.

The Link Between Prompt Engineering and Quality Results

The quality of the output produced by generative AI models depends on the quality of the input. Its input is more precise and well-organized, and the output generated by the AI will be more accurate. The more detailed the input, the less distorted and ambiguous the information of the responses obtained will be. Overly simple prompts are matched by sparse or vague responses⁵⁰.

Quality of results in generative artificial intelligence is related to the quality of prompt engineering.⁵¹

Benefits derived from quality prompts include:

- Achieving higher quality results, significantly reducing the need for manual editing.
- Obtaining personalized, accurate, relevant responses.
- Efficacy of interactions over the long term with artificial intelligence.
- Investigating innovative solutions for achieving increasingly effective results⁵².

⁵⁰ "What Is Prompt Engineering? | IBM." 2023. Ibm.com. November 27, 2024, accessed 14 August 2024, <https://www.ibm.com/topics/prompt-engineering#:~:text=Prompt%20engineering%20is%20the%20process%20of%20writing%2C%20refining>.

⁵¹ Sisini, Valentina. 2024. "Prompt Engineering: Come Formulare Richieste Efficaci per Avere Risposte Precise Dalle IA." Agenda Digitale. Agenda Digitale. July 23, 2024, accessed 14 August 2024, <https://www.agendadigitale.eu/cultura-digitale/prompt-engineering-come-formulare-richieste-efficaci-per-avere-risposte-precise-dalle-ia/>.

⁵² "What Is Prompt Engineering?" IBM.com, Accessed 07 August 2024, <https://www.ibm.com/topics/prompt-engineering#:~:text=Prompt%20engineering%20is%20the%20process%20of%20writing%2C%20refining,generative%20AI%20systems%20to%20create%20specific%2C%20high-quality%20outputs>.

Software Patterns vs. Prompt Patterns: A Comparative Overview

Prompt patterns are useful for improving communication with LLMs and achieving better outputs. They can be applied in many areas, including software development, education, and digital marketing.

Although the academic literature presents cases of proven prompt patterns, this universe is constantly developing.

Software patterns and prompt patterns have commonalities and characteristic differences.

Software patterns are set up to solve software development design problems. Prompt patterns, based on similar principles, are created to improve inputs and outputs derived by leveraging generative artificial intelligence systems such as ChatGPT.

Software patterns

Reusable software patterns are designed to solve problems in software design, development, and maintenance through efficient solutions. These software patterns have a precise and succinct format.

- Name and classification. Each pattern corresponds to a name that describes and identifies it. The classification concerns the purpose for which it is used, such as structural or creational.
- Intent. The purpose for which the pattern is used is described.
- Motivation. The problem to be solved and the related reasons why it is to be solved are stated⁵³.

⁵³ "A Prompt Pattern Catalog to Enhance Prompt Engineering with ChatGPT." n.d. Ar5iv. <https://ar5iv.labs.arxiv.org/html/2302.11382>.

- Structure and participants. The structure outlines the pattern's components, such as classes and objects, and demonstrates how they interact to reach a shared solution.
- Example code. The concrete mapping of the pattern to one or more programming languages is submitted to help developers understand how the pattern can be applied effectively.
- Consequences. Advantages and disadvantages of applying the pattern in practice.

Reusable software patterns are designed to solve problems in software design, development, and maintenance through efficient solutions. These software patterns have a precise and succinct format.

- Name and classification. Each pattern corresponds to a name that describes and identifies it. The classification concerns the purpose for which it is used, such as structural or creational.
- Intent. The purpose for which the pattern is used is described.
- Motivation. The problem to be solved and the related reasons why it is to be solved are stated.
- Structure and participants. The structure outlines the pattern's components, such as classes and objects, and demonstrates how they collaborate to reach a shared solution.
- Example code. The concrete mapping of the pattern to one or more programming languages is submitted to help developers understand how to apply it effectively.
- Consequences. Advantages and disadvantages of applying the pattern in practice.

Key Categories of Prompt Patterns: Input Semantics, Output Customization, and Error Identification

Initial categories of prompt patterns have been created. These categories include Output Customization, Error Identification, Prompt Improvement, Interaction, and Context Control⁵⁴.

TABLE I
CLASSIFYING PROMPT PATTERNS

Pattern Category	Prompt Pattern
Input Semantics	<i>Meta Language Creation</i>
Output Customization	<i>Output Automater Persona Visualization Generator Recipe Template</i>
Error Identification	<i>Fact Check List Reflection</i>
Prompt Improvement	<i>Question Refinement Alternative Approaches Cognitive Verifier Refusal Breaker</i>
Interaction	<i>Flipped Interaction Game Play Infinite Generation</i>
Context Control	<i>Context Manager</i>

Prompt Pattern Classification. Source: White, Jules, Quchen Fu, Sam Hays, Michael Sandborn, Carlos Olea, Henry Gilbert, Ashraf Elnashar, Jesse Spencer-Smith, and Douglas C. Schmidt. 2023. "A Prompt Pattern Catalog to Enhance Prompt Engineering with ChatGPT." ArXiv:2302.11382 [Cs], February (February). <https://arxiv.org/abs/2302.11382>.

Five main categories of prompt patterns are:

- Input Semantics
- Output Customization
- Error Identification
- Prompt Improvement
- Interaction

⁵⁴ White, Jules, Quchen Fu, Sam Hays, Michael Sandborn, Carlos Olea, Henry Gilbert, Ashraf Elnashar, Jesse Spencer-Smith, and Douglas C. Schmidt. 2023. "A Prompt Pattern Catalog to Enhance Prompt Engineering with ChatGPT." ArXiv:2302.11382 [Cs], February (February). <https://arxiv.org/abs/2302.11382>, 2-3.

Input Semantics

Input Semantics concerns how an LLM understands input and converts or translates it into a format that it can use to its advantage. The Meta Language Creation pattern is employed to do this: at the point when the standard input language is not matched correctly to articulate the information the user wants to communicate to the LLM, the LLM translates it by leveraging the Meta Language Creation pattern.

Output Customization

Output Customization focuses on refining the characteristics, formats, and structures of the output generated by the LLM. Five prompt patterns are included in this category: Output Automater, Persona, Visualization Generator, Recipe, and Template. Below, these prompt patterns are explained in detail⁵⁵.

The Output Automater pattern allows the user to create scripts that automate tasks that the output LLM suggests the user perform.

The Persona pattern tells the LLM the person or role of the person acting.

The Visualization Generator pattern allows the user to generate visualizations by generating textual content that can be used with other artificial intelligence tools, such as DALL-E 3⁵⁶.

The Recipe prompt allows the user to get an output consisting of steps, a series of actions to follow, or a list of things to do to achieve a clear and specific goal.

The template pattern lets the user set a template for the output, which the LLM uses to fill in the content.

⁵⁵ "A Prompt Pattern Catalog to Enhance Prompt Engineering with ChatGPT." n.d. Ar5iv. <https://ar5iv.labs.arxiv.org/html/2302.11382>.

⁵⁶ Betker, James, Gabriel Goh, Li Jing, Tim Brooks, Jianfeng Wang, Linjie Li, Long Ouyang, et al. 2023. "Improving Image Generation with Better Captions." <https://cdn.openai.com/papers/dall-e-3.pdf>.

Error Identification

Error Identification deals with the detection and correction of LLM errors. This category also includes the Fact Check List and Reflection patterns.

With the Fact Check List pattern, the LLM creates fact-based statements that must be edited for accuracy.

On the other hand, the Reflection pattern requires the LLM to return to its output and notice any errors in its production.

Advancing AI Communication: Prompt Improvement, Interaction, and Context Control

Prompt Improvement

Prompt Improvement tries to improve the quality of input questions and the output. It involves several patterns, such as Question Refinement, in which better versions of the user question are suggested, and Alternative Approaches, which are methods for completing the task in an alternative way. One way to realize a Cognitive Verifier is to let users answer sub questions before the final answer is revealed. Refusal Breaker is a variant that rephrases the question if an LLM can't answer.

Prompt Improvement includes a set of key patterns to be exploited for optimizing the answers obtained by the LLM:

- Question Refinement involves obtaining an improved version of the original question so that the LLM generates a better answer.
- Alternative approaches are employed to get from the LLM a set of strategies for performing a given task. The user chooses the most convenient strategy from those proposed.
- Cognitive Verifier is a framework that is used to simplify the question by dividing it into several parts. This Cognitive Verifier framework eases the

LLM's processing of individual questions by providing a logical and detailed answer.

- Refusal Breaker: The LLM does not understand the question, so it rephrases it to understand its meaning. Probability that the answer is not relevant is high.

Interaction

Interactive Interaction describes the category in which the LLM and the user interact. It classified models as Flipped Interaction (the roles are reversed, and the LLM asks the questions to the user, stimulating attention, interaction, and active learning), Game Play (useful for creating interactive games), and Infinite Generation (the generative engine continues to produce the output without user input).

Context Control

Concerted to Content Control, the last focus is on LLM, which uses information management. The Context Manager feature allows users to choose the context for the LLM responses.

Despite common assumptions, working as a prompt engineer does not require knowledge of programming languages; however, excellent language skills and analytical skills are sufficient.

A prompt is created using natural language, such as English, to formulate a question that is forwarded to an artificial intelligence tool to obtain as accurate an answer as possible.

In the proposed example, a web agency wants to sponsor a new website creation tool by creating an effective slogan. To achieve the goal, a prompt or instruction is given to a generative artificial intelligence tool.

To create an effective prompt and indicate what path to take to generate output that conforms to requirements, indispensable details such as context and instructions

must be included. Context helps the LLM understand the situation, while instructions suggest to the model what aspects it should focus on to produce the desired result. The more precise the context and instructions are, the better the output or response will be, saving time and labor. The simpler the context and instructions, the more imprecise and vaguer the output.

Significant elements in achieving excellent output are formatting, tone of voice, and length. Formatting refers to the format of the text, such as whether it is a blog article with only paragraphs or with lists and bulleted or numbered lists. The tone of voice defines how one addresses people in professional communication. Length concerns the number of characters in words, including or not including spaces and punctuation marks.

Prompt Engineering Frameworks: An Overview

Mastery of prompt engineering techniques enables workflow optimization. Prompt engineering frameworks are increasingly readily available on the Internet⁵⁷, and it is quite easy to find information about prompt engineering techniques and strategies online. Below are some of the basic prompt engineering frameworks:

- **Zero-Shot Prompting:** The artificial intelligence model is prompted to perform a task without being given any examples in the question. This type of prompting allows general information to be obtained for non-specific tasks, so the answers produced may need to be more accurate.
- **One-shot prompting:** The artificial intelligence model is asked to generate an answer based on an example provided in the application. Including an example helps the artificial intelligence model process a more accurate answer than that obtained by Zero-Shot Prompting. However, the accuracy of the answer varies depending on the quality of the example provided.

⁵⁷ OpenAI. "Best Practices for Prompt Engineering with the OpenAI API." *OpenAI Help Center*. Last modified November 2023, accessed 25 August 2024, <https://help.openai.com/en/articles/6654000-best-practices-for-prompt-engineering-with-the-openai-api>.

- Few-Shot prompting: The artificial intelligence model is asked to generate a response based on some relevant examples in the question by providing some examples of how the artificial intelligence model can save data. On the other hand, it could be more efficient in performing particularly complex tasks⁵⁸.
- Chain-of-thought: The prompt includes examples with intermediate steps to arrive at the final answer. In other words, the prompt starts with a complex question, followed by an artificial intelligence model explaining how to arrive at the solution step by step. This artificial intelligence model answers the question and explains the reasoning behind each step.
- Context Expansion: This prompt is beneficial for expanding information. The 5 Ws rule of journalistic style (Who, What, When, Where, Why) is applied to widen the information contained in the response.
- Language Translation with Contextual Nuance: Leveraging artificial intelligence, it is possible to translate text while maintaining the context intact, an extremely important detail when intervening in translating legal, medical, or otherwise domain-specific texts. In certain cases, it is advisable to pay attention to the context, specifying it immediately after including the text in the question.

AIDA Prompt Framework for Digital Marketing

The AIDA⁵⁹ prompt framework is designed to write marketing text that will attract and emotionally engage potential customers and induce them to act:

- Attention: Eye-catching visual elements, inspiring headlines and other features or highlighting the message conveyed in any way will help get the audience's attention.

⁵⁸ Weave. 2024. "Unlocking the Power of Prompting: Zero-Shot, One-Shot, and Few-Shot Prompting." Medium. Medium. May 11, 2024, accessed 25 August 2024, <https://medium.com/@WeavePlatform/unlocking-the-power-of-prompting-zero-shot-one-shot-and-few-shot-prompting-031eabc84652>.

⁵⁹ Sellers, Amanda. 2022. "The AIDA Model: A Proven Framework for Converting Strangers into Customers." Hubspot. February 4, 2022, accessed 21 August 2024, <https://blog.hubspot.com/marketing/aida-model>.

- Interest: Once the product or service being promoted is appropriately presented, it is important to ensure that the audience's curiosity stays up. Providing more details about the product or service, an engaging story (storytelling) or curious facts helps to achieve this goal.
- Desire: after raising the audience's interest, the objective is to arouse desire for the product by highlighting unique benefits and features.
- Action: Including an effective call-to-action (CTA) prompts the audience to complete a specific task, such as making a purchase, signing up for a newsletter, or visiting a website.

CO-STAR Methodology for Prompt Framework Creation

CO-STAR is a methodology to follow for creating excellent prompt frameworks. The acronym CO-STAR stands for Context (C), Objective (O), Style (S), Tone (T), Audience (A), and Response (R). Each of these elements potentially contains valuable information to achieve a complete output of excellent quality, significantly reducing the risk of ambiguity and facilitating the AI's understanding of the subject matter. In addition, it is advisable always to specify the format and length of the desired text.

In detail, it is necessary to include in the prompt:

- Context: Providing essential information relevant to the AI's understanding of the topic.
- Objective: Specify what you intend to achieve from the prompt, e.g., content generation and a comprehensive explanation.
- Style: Specify how you want the AI to formulate the output, e.g., in a professional or casual style similar to that of a career coach or teacher.
- Tone: The attitude or feeling to be conveyed by the text is defined, e.g., serious, authoritative, humorous, or inspirational.

- Audience: The target audience addressing this may include college students, young professionals, adult audiences, and children between the ages of 2 and 5.
- Response: Specify the desired length and format of the text. For example, you may specify that you want text that is 500 words long, 1200 characters, in bulleted list form or table form.

Singapore Government Prompt Royale: Prompt Engineering Tournament

The Singapore government is at the forefront of technology and has shown great interest in prompt engineering developments in recent years, as demonstrated by the writing of a Prompt Engineering Playbook⁶⁰.

Internationally prominent events prove how important it is nowadays to effectively master the art of prompt engineering. These include Prompt Royale, a competition organized by the Government Technology Agency of Singapore (GovTech) in June 2023. Over 400 aspiring prompt engineers attended the tournament, which ended on November 8, 2023, and was won by Sheila Teo⁶¹.

Sheila Teo outclassed the competition by challenging herself to perform complex tasks like creating chatbots and analyzing data. This competition helped further to spread the culture of innovation in prompt engineering.

Conclusions

⁶⁰ GovTech Data Science & AI Division. *Prompt Engineering Playbook (Beta)*. Singapore: Government Technology Agency, 2023. Available at <https://go.gov.sg/launchpad>.

⁶¹ Lee, Nicole. 2024. "How GovTech Organised Singapore's First Live GPT-4 Prompt Engineering Tournament." Medium. April 18, 2024, accessed 15 August 2024, <https://minicolee.medium.com/how-govtech-designed-the-worlds-first-gpt-4-live-tournament-6249cfc8aa97>.

Research indicates that the world of work is more dynamic than ever. Various companies on a global scale are revisiting their organizational structure, cutting jobs, and laying off people in traditional roles in favor of employing artificial intelligence. A recent example is Klarna, where the decision was made to lay off over 2,000 employees, replacing them with automated processes driven by artificial intelligence while retaining only the engineers and continuing to hire new ones^{62 63}

A potential challenge is coordinating work groups composed of people who work in the same field but are of different ages and have varying skill sets. An adult with a degree in Computer Science has skills and knowledge different from that of a recent graduate. For this reason, the real challenge in a work environment is to create and make mixed teams work effectively, proposing retraining sessions for more experienced individuals to update their skills. The European Community, which has embraced and views the use of artificial intelligence positively even in digital marketing while setting clear boundaries, has initiated a series of wide-ranging actions to update the skills of European citizens.

Certainly, in some nations, regions, and areas, for a few reasons, this ambitious goal of achieving digital literacy for at least 80% of the European population may not succeed. As in the field of decentralized international cooperation, it would be advantageous to involve local and regional associations and organizations to reach as many people as possible locally, in small communities, from the youngest to the oldest, ensuring no age group is excluded, with a series of initiatives including the use of non-formal learning. Actions of this kind have the power to bypass potential distrust among the population and the fear of confronting something extremely new and, in some ways, disruptive.

⁶² KLarna. 2024. "Klarna AI Assistant Handles Two-Thirds of Customer Service Chats in Its First Month." [Www.klarna.com](https://www.klarna.com/international/press/klarna-ai-assistant-handles-two-thirds-of-customer-service-chats-in-its-first-month/). February 27, 2024, accessed 29 August 2024, <https://www.klarna.com/international/press/klarna-ai-assistant-handles-two-thirds-of-customer-service-chats-in-its-first-month/>.

⁶³ Redazione Sky TG24. 2024. "Klarna Vuole Sostituire Metà Dei Dipendenti Con l'Intelligenza Artificiale." [Tg24.Sky.it](https://tg24.sky.it/economia/2024/08/29/klarna-dipendenti-intelligenza-artificiale). Sky TG24. August 29, 2024, accessed 29 August 2024, <https://tg24.sky.it/economia/2024/08/29/klarna-dipendenti-intelligenza-artificiale>.

References

Asana. 2024. "Asana." Accessed August 3, 2024. <https://asana.com/it/resources/state-of-ai-work>.

BBC News. 2024. "Sci/Tech | Full Text: Nixon's Unused Apollo Speech." Accessed August 24, 2024. <http://news.bbc.co.uk/2/hi/science/nature/390933.stm>.

Betker, James, Gabriel Goh, Li Jing, Tim Brooks, Jianfeng Wang, Linjie Li, Long Ouyang, et al. 2023. "Improving Image Generation with Better Captions." Accessed August 25, 2024. <https://cdn.openai.com/papers/dall-e-3.pdf>.

Cambridge Dictionary. 2019. "PROMPT | Meaning in the Cambridge English Dictionary." Cambridge.org. Accessed August 14, 2024. <https://dictionary.cambridge.org/dictionary/english/prompt>.

Canva. 2024. "Canva." Accessed August 15, 2024. <https://www.canva.com/>.

Ch. B. 2024. "Enseignement Supérieur. L'Université de Strasbourg Progresse Dans Le Classement de Shanghai." Les Dernières Nouvelles d'Alsace. Accessed August 15, 2024. <https://www.dna.fr/education/2024/08/15/l-universite-de-strasbourg-progresse-dans-l-e-classement-de-shanghai>.

Coolers. n.d. "Color Contrast Checker - Coolers." Accessed August 2, 2024. <https://coolers.co/contrast-checker/112a46-acc8e5>.

Crestodina, Andy. 2019. "[New Research] How Has Blogging Changed? 5 Years of Blogging Statistics, Data and Trends." Orbit Media Studios. Accessed August 6, 2024. <https://www.orbitmedia.com/blog/blogging-statistics/>.

European Commission. 2024. "Regulatory Framework on AI | Shaping Europe's Digital Future." Accessed August 2, 2024. <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai>.

European Union. 2024. *Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying Down Harmonised Rules on Artificial Intelligence and Amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act).* Official Journal of the European Union L 1689. Accessed August 12, 2024. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=OJ:L_202401689.

"Facts and Figures - University of Strasbourg." 2020. Unistra.fr. Accessed August 15, 2024. <https://en.unistra.fr/about-us/facts-and-figures>.

Giannini, Federico. 2024. "L'avvento Dell'AI Nel Marketing: Le Tendenze Che Cambiano Tutto." Agenda Digitale. Accessed August 7, 2024. <https://www.agendadigitale.eu/mercati-digitali/lavvento-dellai-nel-marketing-le-tendenze-che-cambiano-tutto/>.

Grammarly. 2019. "Plagiarism Checker by Grammarly." Accessed August 2, 2024. <https://www.grammarly.com/plagiarism-checker>.

Hassija, Vikas, Vinay Chamola, A. Mahapatra, Abhinandan Singal, Divyansh Goel, Kaizhu Huang, Simone Scardapane, Indro Spinelli, Mufti Mahmud, and Amir Hussain. 2023. "Interpreting Black-Box Models: A Review on Explainable Artificial Intelligence." *Cognitive Computation* 16, no. 1 (August): 47-70. <https://doi.org/10.1007/s12559-023-10179-8>.

IBM. 2023. "What Are AI Hallucinations?" IBM.com. Accessed August 10, 2024. <https://www.ibm.com/topics/ai-hallucinations>.

———. 2024. "Etica Dell'AI." Accessed August 3, 2024. <https://www.ibm.com/it-it/impact/ai-ethics>.

———. 2024. "What Is Explainable AI?" Accessed August 2, 2024. <https://www.ibm.com/topics/explainable-ai>.

———. 2024. "Trust Transparency." Accessed August 3, 2024. <https://www.ibm.com/policy/trust-transparency-new/>.

"Home - the Work Innovation Lab." 2023. The Work Innovation Lab. Accessed August 3, 2024. <https://asana.com/work-innovation-lab>.

IDFA. 2019. "IDFA 2019 | Trailer | in Event of Moon Disaster." YouTube. Accessed August 24, 2024. <https://www.youtube.com/watch?v=nGWVn1xnMlg>.

ISTRAD. 2024. "Master's in Audiovisual Translation." Accessed July 11, 2024. <https://www.mastradumatica.com/en/>.

Klarna. 2024. "Klarna AI Assistant Handles Two-Thirds of Customer Service Chats in Its First Month." www.klarna.com. Accessed August 29, 2024. <https://www.klarna.com/international/press/klarna-ai-assistant-handles-two-thirds-of-customer-service-chats-in-its-first-month/>.

LABASAD. 2024. "Online Master in UI/UX Design." Accessed July 11, 2024. <https://www.labasad.com/en/master/online-master-in-ui-ux-design/>.

Martin, Michelle. 2023. "How to Boost Engagement with LinkedIn Carousel Posts and Ads." Social Media Marketing & Management Dashboard. Accessed August 15, 2024. <https://blog.hootsuite.com/linkedin-carousel/>.

"Master of Arts in Translation." 2024. Kent State Online. Accessed July 11, 2024. <https://onlinedegrees.kent.edu/degrees/master-of-arts-in-translation>.

"Master of Arts in Translation and Localization Management." 2024. Middlebury Institute of International Studies at Monterey. Accessed July 11, 2024.

<https://www.middlebury.edu/institute/academics/degree-programs/translation-localization-management>.

"Master's in User Experience – UX Design | ASU Online." 2024. Asu.edu. Accessed July 11, 2024. <https://asuonline.asu.edu/online-degree-programs/graduate/online-user-experience-masters/>.

MSU. 2024. "UX Master's Program." Accessed August 23, 2024. <https://gradstudies.mi.msu.edu/ux/>.

"Online MA in Communication | Web Design | UFCJC." 2024. UF CJC Online Master's. Accessed August 23, 2024. <https://onlinemasters.jou.ufl.edu/web-design/>.

OpenAI. 2024. "SearchGPT Prototype." Accessed August 25, 2024. <https://openai.com/index/searchgpt-prototype/>.

"Plagiarism Checker for Students | in Partnership with Turnitin." n.d. Scribbr. Accessed August 2, 2024. <https://www.scribbr.com/plagiarism-checker/>.

Rössler, Andreas, Davide Cozzolino, Luisa Verdoliva, Christian Riess, Justus Thies, and Matthias Nießner. n.d. "FaceForensics++: Learning to Detect Manipulated Facial Images." Accessed August 24, 2024. https://openaccess.thecvf.com/content_ICCV_2019/papers/Rosslar_FaceForensics_Learning_to_Detect_Manipulated_Facial_Images_ICCV_2019_paper.pdf.

Saragaglia, Francesca. 2024. "GEO, Generative Engine Optimization, Cos'è E Come Funziona." Fastweb Plus. Accessed August 6, 2024. <https://www.fastweb.it/fastweb-plus/digital-marketing-social/geo-generative-engine-optimization-cose-e-come-funziona/>.

Screaming Frog. 2022. "Screaming Frog SEO Spider." Accessed August 2, 2024. <https://www.screamingfrog.co.uk/seo-spider/>.

"ShanghaiRanking-Universities." 2024. Shanghairanking.com. Accessed August 15, 2024. <https://www.shanghairanking.com/institution/university-of-strasbourg>.

Sisini, Valentina. 2024. "Prompt Engineering: Come Formulare Richieste Efficaci per Avere Risposte Precise Dalle IA." Agenda Digitale. Accessed August 14, 2024. <https://www.agendadigitale.eu/cultura-digitale/prompt-engineering-come-formulare-richieste-efficaci-per-avere-risposte-precise-dalle-ia/>.

Trem

olada, Luca. 2024. "Dai Deepfake Di Taylor Swift Alle Fake News Con ChatGpt: Come Difendersi Dalla Disinformazione ... " Il Sole 24 ORE. Accessed August 23, 2024.

<https://www.ilsole24ore.com/art/dai-deepfake-taylor-swift-fake-news-chatgpt-come-difendersi-disinformazione-elettorale-AFi8RgTD>.

Truepic. n.d. "Homepage." Accessed August 24, 2024. <https://truepic.com/>.

"Translation and Localisation Studies MA - the University of Nottingham." 2024. Nottingham.ac.uk. Accessed July 11, 2024. <https://www.nottingham.ac.uk/clas/departments/modern-languages/postgraduate/translation-and-localisation-ma/translation-and-localisation-ma.aspx>.

Wagmeister, Elizabeth, and Kate Sullivan. 2024. "Trump Posts Fake AI Images of Taylor Swift and Swifties, Falsely Suggesting He Has the Singer's Support." CNN. Accessed August 23, 2024. <https://edition.cnn.com/2024/08/19/politics/donald-trump-taylor-swift-ai/index.html>.

Weave. 2024. "Unlocking the Power of Prompting: Zero-Shot, One-Shot, and Few-Shot Prompting." Medium. Accessed August 25, 2024. <https://medium.com/@WeavePlatform/unlocking-the-power-of-prompting-zero-shot-one-shot-and-few-shot-prompting-031eabc84652>.

White, Jules, Quchen Fu, Sam Hays, Michael Sandborn, Carlos Olea, Henry Gilbert, Ashraf Elnashar, Jesse Spencer-Smith, and Douglas C. Schmidt. 2023. "A Prompt Pattern Catalog to Enhance Prompt Engineering with ChatGPT." *ArXiv:2302.11382 [Cs]*, February. Accessed August 25, 2024. <https://arxiv.org/abs/2302.11382>.

"W3C Accessibility Standards Overview." 2019. Web Accessibility Initiative (WAI). Accessed August 2, 2024. <https://www.w3.org/WAI/standards-guidelines/>.

"What Is Prompt Engineering?" 2023. IBM.com. Accessed August 14, 2024. <https://www.ibm.com/topics/prompt-engineering>.