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Artificial Intelligence : Your New Personal Assistant

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Abstract

This article offers the perspective of an Innovation Manager with over of 20 years of professional and academic experience on the impact of Artificial Intelligence (AI) on daily life as per knowledge in mid-August 2024.

The current AI Revolution marks a profound shift, surpassing previous industrial and digital transformations. AI is being rapidly integrated into daily life, from recommendation systems to virtual assistants. Understanding AI from the user's perspective is crucial. Key to managing this revolution is timely adoption, strategic approach, and practical application. AI offers extensive personal benefits, aiding information retrieval, content creation and personalized assistance. AI automates tasks, transforms business processes and impacts various sectors, while human intelligence will be more and more important in ensuring empathy and complex reasoning.

Artificial Intelligence + Human Intelligence = Assisted Intelligence!

Generative AI (GenAI) is a significant advancement, creating new content such as text, images, audio, video and code. GenAI can work synergistically with AI to enhance outcomes. However, it is not an exact science and can produce a bias and/or hallucinations; human role is to identify and solve such content issues. Large Language Models (LLMs) are trained on vast datasets to understand and generate new contents. Chatbots use LLMs to simulate human conversations. LLMs come in both closed and open-source models, each with distinct features. The future of AI involves integrating Small Language Models (SLMs) into personal devices. Cultural influences on AI training must be considered. Responsible AI use requires ethical application, critical review, and understanding its capabilities and limitations. AI should be used with wisdom (not just as an end-to-end tool, whose outputs are ready to cut and paste). GenAI needs prompt engineering skills. Specialized LLMs, Chatbots and tools are available for generating texts, translations, images, audios, videos, code. Some models that can generate more than one output are multimodal LLMs. Methods for marking AI contents and tools to distinguish AI-generated contents and deep fake will became more and more necessary. Copywriters, translators, sound designers/musicians, photographers, video-makers will evolve their own role, as users will integrate AI into their daily routine, following the golden rules for a responsible use of AI.

Keywords: Artificial Intelligence (AI), Assisted Intelligence, Bias, Chatbot, Generative Artificial Intelligence (GenAI), Hallucination, Large Language Model (LLM), Machine Learning (ML), Prompt Engineering, Responsible AI, Small Language Model (SLM)

The AI Revolution: A New Era of Personal Assistance

We are currently in the middle of an AI Revolution, a period of transformation that surpasses even the Industrial and Digital Revolutions. Artificial intelligence (AI) is no longer a futuristic concept but a present-day reality that is rapidly being integrated into our daily routines. From online recommendation systems to virtual assistants, AI is already interwoven into the fabric of our lives, often without us even realizing it. This revolution is not just about technological advancement; it's about fundamentally changing how we interact with the world and how we accomplish tasks, both personally and professionally. The user's perspective is paramount in understanding this shift. This article will explore how to understand and integrate AI into your daily routine, in a responsible way.

AI can be analysed from two distinct points of view: the user perspective and the designer/developer perspective. While understanding the technical complexities of AI design is crucial for professionals in this field, the **user perspective** is more broadly applicable to the generic public. Just as one can drive a car without understanding the thermodynamics of the engine, users can harness the power of AI without being experts in its design. It is important, however, for users to understand how to interact effectively with AI, in the same way one needs to know how to put petrol, gas, diesel or energy in a car.

AI for Personal and Professional use

Timing is key in this revolution; the time to adopt and integrate AI is now. Delaying the adoption of AI puts individuals at a disadvantage, as others will be using it to enhance productivity

and efficiency. The key factors to successfully managing this AI revolution include approach and execution, not just theory. It's important to be willing to train and put into practice the skills that will allow you to implement what you learn and impact the world. Ideally, AI will be used daily as a personal assistant or consultant in one's chosen field, allowing users to save time.

The **personal applications** of AI are vast and ever-expanding. AI can assist information searches for training programs, recipes, travel, legal aspects, and more. It can provide summaries and translations, create texts, photos, videos, music, and even help write books. Those who actively use AI on a personal level today will achieve better results, but it is important to know how to interact with AI by requesting, verifying, and reviewing what it recommends. AI can act as a super personal consultant, always available and able to help.

The **professional impact** of AI is equally profound, though it requires coordination with one's work environment. AI is transforming professions that can be automated or rely on quantitative data. For example, tasks like writing a marketing email will shift from being done directly by a person to being supervised by a person who guides an AI to complete it. Many business processes in areas such as human resources, marketing and product development are undergoing significant changes due to AI. Some professions, however, will be less affected to AI disruption. These include roles that rely on empathy, emotional intelligence, or non-standardizable tasks that require extreme precision.

The study "The Business Opportunity of AI" highlights that in 2024, 92% of organizations globally used AI to improve employee productivity, and 43% of these reports the highest Return On Investment (ROI) from these use cases. [IDC, 2024].

More generally, it is estimated that the use of generative AI in large companies has increased from 55% in 2023 to 75% in 2024. In Europe, however, the adoption of AI in professional settings is still relatively low. Only 17% of workers use AI for their work tasks, and only 23% have received specific training on the topic. Additionally, a large percentage of workers, 54%, pass off AI-generated work as their own, and 29% claim higher AI skills than they actually possess. This points to a need a greater awareness and proper training in AI usage in professional settings. [Salesforce, 2024].

AI Increases Productivity by 20% [BCG, 2024]
We have entered the "**Post search engine Era**"! Online searches will be carried out increasingly on AI models (e.g. Perplexity, Poe AI, Search GPT), less and less on classic search engines (such as www.google.com; in fact, Google launched AI Overviews in July 2024).

Since 1950 we have heard about **Artificial Intelligence (AI)**: "software programs that mimic cognitive decision-making to sense, reason, and adapt" [Kellogg School of Management at Northwestern University, 2024].

Artificial Intelligence only examines data and models to compose words and sentences (e.g. AI creates words by adding a few characters at a time on a statistical basis).

On the other hand, Human Intelligence only examines the meaning of words to compose sentences (e.g. the human mind chooses whole words to add meaning to a sentence).

"**Assisted Intelligence** uses AI only as an input to assist a human being in making the final decision (better and faster) " [Kellogg School of Management at Northwestern University, 2024].

It makes sense to apply Artificial/Assisted Intelligence when the value of the right decision is high. Artificial Intelligence is a form of technology that is not good or bad, its goodness depends on how it is used; it is hoped that we can all use it to the best of our ability. History has taught that content will generate the added value of a digital technology. The goodness of data will be at the heart of generating value through AI.

Since 1980 we have been talking about **Machine Learning** (ML) or automatic learning: a subset of Artificial Intelligence. "Machine learning systems use past data to build a model capable of making decisions of future data" [Kellogg School of Management at Northwestern University, 2024].

The Generative AI landscape
AI is a transversal skill for a person (like web browsing in the late 90s). To consolidate it, 2 prerequisites are necessary: sensitivity/culture (the user must consider AI as a relevant factor for the future) and specific training at least in 2 areas: Generative Artificial Intelligence ("Generative AI") and definition of requests ("Prompt Engineering").

From November 2022 we have talked about **Generative AI (GenAI)**: "A type of AI that generates new content and artifacts such as text, images, audio... Generative AI's key ability is to produce novel, high-quality output based on a dataset or training. It uses machine learning models to create new data similar to the data it has been trained on. It "learns" from existing examples and then applies that learning to generate new content or predictions. Generative AI models learn the patterns and structure of their input training data and then generate new data with similar characteristics" [Kellogg School of Management at Northwestern University, 2024].

The **relationship between AI and GenAI** is synergistic. AI excels in creating efficiency by improving cost and speed, while GenAI excels in creative, flexible and personalized solutions. These technologies can work in parallel, where AI addresses routine queries, GenAI tackles complex ones, or sequentially, where AI analyses data, GenAI generates personalized content.

Generative AI is not an exact science. It can be wrong due to a bias and/or hallucinations. **Bias** occurs when training data is not representative, causing the AI to make skewed predictions. For instance, if a flower identification AI is

only trained on images of roses and tulips, it will incorrectly classify an orchid as a rose or tulip. This issue can have much higher stakes when AI is used to determine loans or hiring decisions. **Hallucinations** refer to content that is completely or partially invented by the AI. This occurs when the AI makes random linguistic associations that may seem plausible but are ultimately untrue. In addition to this, generative AI may not provide the same response even with the same prompt due to statistical randomness.

Large Language Models and Chatbots

A Large Language Model (LLM) is "A type of AI that has been trained on vast amounts of text or data. An LLM will learn from existing content or data to generate new original content." [Kellogg School of Management at Northwestern University, 2024].

LLMs use algorithms to understand and generate natural language from a statistical viewpoint rather than semantically as humans do. The parameters store the information learned by a LLM during the training, and the number of parameters is an indicator of the LLM's capacity to understand and interpret the world. LLMs use tokens (the smallest units of data, to process information) to generate new contents. The context window (the number of tokens an LLM can work with) determines the amount of information the AI model can handle at any one time.

Chatbots are software applications or web interfaces that mimic human conversation through text or voice. Modern chatbots can maintain conversations and simulate human behaviour, using generative AI. They are used in various applications, including customer support, process automation, education and even as replacements for traditional search engines. The most innovative AI chatbots can pass tests to get into top American universities.

LLMs can be closed models or open models. **Closed models** (such as ChatGPT by Open AI, Claude by Anthropic, Copilot by Microsoft, Gemini by Google) do not allow access to their code. Users can only see the output, not the inner workings of the AI model.

Open models (such as Grok by X, Llama by Meta, Mistral) make their code available for users and developers to modify and create their own chatbots.

The Future of AI: Small Language Models

The future of AI is heading towards integration into our personal devices with **Small Language Models** (such as Claude by Anthropic, Gemma by Google, Llama by Meta, Phi by Microsoft). These models can be executed locally on AI PC (es. Microsoft Copilot+) and AI smartphones (es. Google Pixel 8 Pro, Oppo Find X7, Samsung S24, Vivo X100, Xiaomi 14). Local AI processing does not involve the need to send user data to the cloud, enabling offline access, local processing of sensitive data and cost savings. This advancement will allow AI to become more readily accessible to a larger part of the population.

AI, Culture and Human Responsibility

It is important to recognize the cultural influences in AI. In 2023, 61 AI models were produced in the US, 21 in the European Union, and 15 in China [AI Index Report 2024, Stanford University]. Most AI models are trained predominantly on English language sources (e.g. GPT-3 by OpenAI was trained with 92.65% of words in English). This strong dependence on **US sources** in training can affect their understanding and application in different cultural contexts. It is crucial for each culture to develop its own Artificial Intelligence to take unique perspectives and histories into account.

As AI continues to evolve, **managers** and **individuals** must strike a balance between wisdom and creativity. It is important to not humanize AI but to become more human in the responsible application of this technology. The real challenge is to use AI without being subjected to it.

AI surpasses human performance in several tasks (e.g. image classification, understanding the English language), however, AI stands still behind in more complex tasks (e.g. competitive-level mathematics). [AI Index Report 2024, Stanford University].

However, **AI is not empathetic**: it is not able to capture/generate emotions (e.g. sensitivity), grasp linguistic/characteristic nuances (e.g. irony) and cultivate lasting relationships (e.g. trust).

There are no global standards in AI liability assessments. There is no real worldwide comparison of the risks and limitations of high-performance AI models. There are still no universal rules recognized by all governments and there will not be until 2026. **We are all responsible!** Just an example: according to the administrator of the Pulitzer Prize, 5 of the 45 finalists of the 2024 Pulitzer Prizes for Journalism have disclosed that they used AI in the process of researching, reporting or narrating their contributions. They had the honesty to declare it before being possibly rewarded. There is nothing wrong with being helped by technology a bit like when in the 90s we obtained information from searches on the web, but just as back then we indicated that such information had been found on www.website.com, today we must indicate that content was partially generated by AI. There are AI tools to defend **copyright** and to detect the percentage of copyrighted content generated by AI. AI should be used with wisdom (not just as an end-to-end tool). GenAI needs prompt engineering skills and human common sense in using its outputs.

GenAI Models Specialized

Specialized LLMs, Chatbots and tools are available to generate different outputs (from various input):

1. **Texts** (A2T from Audio, I2T from Image, T2T from Text, V2T from Video): commercial texts, creative texts, formal texts, legal texts, marketing texts, translations.
2. **Images** (A2I from Audio, I2I from Image, T2I from Text).
3. **Audios** (A2A from Audio, I2A from Image, T2A from Text, V2A from Video): music, sounds, speech, voices.

4. **Videos** (A2V from Audio, I2V from Image, T2V from Text, V2V from Video): imaginative videos, realistic videos, stylized videos, video animations, video clips.
5. **Code** (A2C from Audio, C2C from Code, I2C from Image, T2C from Text, V2C from Video).

Some AI models called **multimodal LLMs** can generate more than one output (such as images + videos + audio, e.g. HeyGen).

With reference to the **LLMs and Chatbots for text generation** (particularly **translations**) some key points should be highlighted:
- LLMs (e.g. ChatGPT, Gemini, Copilot), generalist platforms (e.g. Google Translate) and specialized LLMs (e.g. DeepL) translate content into the desired language.
- Typical LLM/chatbot translation issues: loss of context, idioms/dialects, dependency on training data, real-time translations.
- Prompt: set of instructions provided to the model to obtain the desired translation (e.g. target language, type of text, source language, specific/linguistic competence of user, style of the translated text): one shot (in a single shot) or incremental (e.g. in 3 steps).
- Translations of a long text are better if made one sentence translated at a time.
- The translation AI-generated always needs to be reviewed.

Let's look at prompting for a better use of LLM/chatbot in generating translations:
Context: it is always better to indicate:
- The language of the source text (e.g. Dutch).
- The target language into which you want the text translated (e.g. English).
- Level of linguistic competence of the target user (e.g. native Dutch speaker): LLM will tend to use English understandable to non native speakers.
- Specific competence level of the target user (e.g. expert in the medical field): LLM will tend to use technical and specific terms.

Type of Input Text: text to be translated (e.g. medical report).
Style of the output text: style of the translated text (e.g. technical, formal, refined).

An example of a **one shot prompt** for generating a translation: "*The text to be translated is a medical document* [type of text] *written in Dutch* [source language]. *The translation will be used by a Dutch* [linguistic competence of user] *doctor* [specific competence of user], *therefore it uses technical, formal and refined language* [style of the translated text] Here is the [text]".

The same instructions can be transferred with an **incremental prompt** approach (e.g. in 3 steps):
1. *"The text to be translated is a medical document* [type of text to be translated] *written in Dutch* [source language], *do you understand?"*.

2. *"The text must be translated into English for a Dutch doctor* [specific competence of the target] [linguistic competence of the target]. *With technical, formal and refined language* [style of the translated text], *do you understand?"*.
3. "Here is the [text to be translated]".

The best practice to translate a long text is to translate one sentence at a time, however it is always necessary to verify the translation.

With reference to the **LLMs and Chatbots for image generation** some key points should be highlighted:
- The AI models generate images from scratch (e.g. DALL-E for everyone, Midjourney for experts), modify images (e.g. Canva, Adobe Photoshop) and manage photos (e.g. Google Photos).
- A basic/lean prompt for images from text (T2I) is subject + style + accessory elements (write less, preferably in English).
- An advanced/complete prompt for images from text (T2I) includes various aspects typical of the photographic world: main subject, secondary subjects/accessories, lens, colours, context/location, style, view, framing, focus, light, shadows, effects, etc.
- To distinguish photos generated with AI, you can insert visible signatures or invisible watermarks.

An example of prompt for generating a photo is: "A long shot photo from behind of a guy walking in the desert with a ruined backpack, tilt shift photo, sunrise, long shadow".

With reference to the **LLMs and Chatbots for generating audios** some key points should be highlighted:
- AI models generate voices (e.g. Voice Engine) and music (e.g. AIVA or Soundful) from scratch starting from two lines of text/a short melody/a video clip.
- AI models modify voices (e.g. Voice.ai in real time, Adobe Podcast removing background noise).
- AI models edit music (e.g. Suno with realistic sound effects and autotune sound distortion effects).
- To distinguish audio generated by AI it is possible to use new watermarking methods (invisible digital markings) to mark audio content generated by an AI platform.

With reference to the **LLMs and Chatbots for video generation** some key points should be highlighted:
- AI models generate new videos starting from textual prompts (e.g. Google Veo, Open AI Sora), from images (e.g. Google Veo) and from videos (Open AI Sora).
- AI models edit videos: e.g. Adobe Photoshop (for professional videos), InVideo (for You Tube video editing), Pictory (for transcriptions) and Opus (for social network clips).
- AI models create avatars (e.g. HeyGen, AI Studios) and multilingual videos (e.g. HeyGen).

On the websites of LLMs for video generation it is possible to watch AI generated videos and the related prompts.

With reference to the **LLMs and Chatbots for code generation,** they are widely used in software development and offer powerful tools to:

- Automate low-level repetitive tasks (they can be done by AI).
- Understand code written by others.
- Improve the quality of code already written by you or others (e.g. to identify bugs).
- Generate documentation (given the source code that is provided to the LLM).
- Create and conduct automatic tests.
- Adopt innovations (e.g. libraries, interfaces).
- Facilitate porting between programming languages (portability of code between various software).

A useful tool is **Poe AI** ("Platform for Open Exploration"), an open-source AI platform (desktop and mobile) that allows users to access various AI models (e.g. Claude, GPT, Gemini, Llama, Mistral) and AI art generators (e.g. Stable Diffusion XL, Playground, DALL-E). Poe AI generates the output using the selected model, its parameters and training data (each LLM has different advantages). It also allows you to create your own custom AI chatbot based on any AI model, to which you can add a knowledge base or cite online resources.

The impact of Artificial Intelligence on the job market

AI represents an opportunity, not a risk!

Professions will evolve in line with progress and innovations (as happened in the past with the industrial revolution and the digital revolution) within new business processes.

The professions that will evolve the most are those that can be automated, in which the role of man will go from a mere automatic executor to a reviewer of AI's work.

New professions will be created (in AI companies the number of employees is not decreasing!). Data science will create roughly 11.5 million job openings by 2026 [U.S Bureau of Labour Statistics, 2024].

Copywriters, translators, sound designers/musicians, photographers, video-makers and software developers will face big changes to the way they work and will benefit from enormous opportunities. They will have to evolve their role from personally producing every output to planning the AI model and reviewing every output generated by AI personal assistants:

- Training accurately the AI models.
- Defining great prompts.
- Reiterating the AI generation until a satisfying output is reached.

The impact of Artificial Intelligence on everyone's life

There are many AI tools and they are changing quickly, for this reason it is useful to use a **directory of AI tools** (www.theresanaiforthat.com).

Below there are some ways in which users can use **AI in** their **daily routine**:

- Gift ideas (e.g. formal gifts to people from little-known cultures).
- Answering "embarrassing" questions.
- Creation of work projects and hobbies.
- Romantic date ideas.
- Podcast and news recap.
- Personalized training plans.
- Search for doctors/lawyers/consultants.

AI can be useful also in **automating repetitive tasks** even between different applications, such as transferring data from emails/from a webform to an excel sheet, which automatically collects all the data received from thousands of emails (e.g. through Zapier).

To help everyone approach and manage GenAI as well is possible, keep in mind **10 golden rules**:

1. Integrate AI into your daily routine.
2. Choose the most functional AI tool for each specific task.
3. Have clear goals and desired outcomes in mind before using AI.
4. Write an initial prompt clearly with context (are you a... act like a...), instructions (objective, target) and request (required output, 3 alternatives, style, etc.).
5. Add subsequent prompts (additional data and examples) to guide the LLM model.
6. Do not be discouraged by a prompt not understood by LLM (or in case of error): it is usually sufficient to repeat the same prompt or slightly modify the verbal formulation.
7. Restate and refine the suggestion until it is completely clear to the LLM.
8. Accept the final output provided by the LLM as a good draft (which needs to be reviewed by the human mind).
9. Check the output on the web: links, quotes and sources (a hallucination can always exist).
10. Refine the output to add personal touches (better to edit individual words with your own style).

"The transition we are currently experiencing with AI will be the most profound of our lifetime, much greater than the transition to mobile devices or the web that preceded it" as said Mr Sundar Pichai (CEO of Google and Alphabet).

In conclusion, the AI revolution is here, and it is up to us to harness its potential responsibly. By understanding the fundamentals of AI, being aware of its limitations, and integrating it thoughtfully into our lives, we can navigate this transformative period and ensure that AI serves as a force for progress and positive change. The most important thing is to make a responsible use of AI.

References

1. Adobe Podcast. AI-powered audio tools that elevate your voice. https://podcast.adobe.com
2. Adobe Creative Cloud. Create at the speed of imagination. https://www.adobe.com/products/photoshop.html
3. AI STUDIOS. Create Videos with AI STUDIOS' AI Video Generator. https://www.aistudios.com
4. AIVA. Your personal AI music generation assistant. https://www.aiva.ai
5. BCG, 2024.
6. Canva. Canva makes it easy to create and share professional designs. https://www.canva.com
7. ChatGPT. https://chatgpt.com
8. Claude. https://claude.ai
9. Data Masters. Artificial Intelligence Courses. https://www.datamasters.it
10. DeepL. https://www.deepl.com
11. Google AI for Developers. (2024). Gemma Open Models. https://ai.google.dev/gemma
12. Google DeepMind. https://deepmind.google/technologies/veo/veo-2
13. Google Gemini. https://gemini.google.com
14. Google Photos. https://www.google.com/photos
15. Google Translate. https://translate.google.com
16. Grok. https://x.ai/grok
17. HeyGen's. Create and translate videos with HeyGen's AI Video Generator. https://www.heygen.com
18. IDC, 2024.
19. Invideo AI. https://invideo.io
20. Llama. https://www.llama.com
21. Microsoft. (2024). Phi open models. https://azure.microsoft.com/en-us/products/phi
22. Microsoft Copilot. https://copilot.microsoft.com/
23. Mistral AI. https://mistral.ai
24. Mid Journey. https://www.midjourney.com
25. Northwestern University. (2024). Kellogg School of Management. Northwestern University. https://www.kellogg.northwestern.edu/
26. Open AI. https://openai.com/index/dall-e-2
27. Open AI. SearchGPT Prototype. https://openai.com/index/searchgpt-prototype/
28. Open AI. https://openai.com/sora
29. Opus.ai. https://opus.ai
30. Perplexity. https://www.perplexity.ai
31. Pictory. https://pictory.ai
32. Playground. https://playground.com
33. Poe. https://poe.com
34. Soundful. https://soundful.com/
35. Stanford University. (2024). Artificial Intelligence Index Report 2024. Stanford University. https://aiindex.stanford.edu/report/
36. Stable Diffusion XL. https://stablediffusionxl.com
37. Sundar Pichai (CEO of Google and Alphabet), 2023.
38. Suno. https://suno.com
39. There's An Ai For That. https://www.theresanaiforthat.com
40. U.S Bureau of Labour Statistics, 2024.
41. Voice AI. https://voice.ai
42. Voice Engine Open AI – AI Text to Speech Software. https://voicengine.ai