

AI for non-programmers

Convenient AI applications for academia



What AI's do you know and use?



LLM's - not just ChatGPT



- **LLM's are large language models**
- **Those of ChatGPT are by far most widely used**
- **Other models from other organisations: Meta (LLama), Mistralai (Mistral), Microsoft (Phi)**
- **Principle: The user gives a prompt, the model continues**
- **Wide set of applications possible, including writing, summarizing, or creation of code**

Huggingface



- Huggingface has open source (modifiable) Large Language Models: [Huggingface Chat](#)
- Allows to try out different LLM's and customize them
- System prompt: Assigns a role to the AI, for example as a mathematician or a programmer
- Assistant: Further customized model, can be ordered, for example, to access Wikipedia
- AI Playground: Allows to change parameters of the AI - set temperature to 0 to make results replicable

Literature Research and Summary



- **Should I use LLM's to search for or summarize literature?**
- **My view: Probably not**
- **Different AI's give different results**
- **Each paper already has an abstract**
- **LLM's sometimes still generate papers that do not exist.**

Literature Research with AI



- I often find individual papers and wish to explore the networks behind them
- I use [researchrabbit](#)
- Allows to find papers cited by a certain paper, papers who cite a certain paper and papers which are thematically close to a paper
- Shows networks of papers and/or authors
- Shows abstract, allows to download PDF's

Quantitative Analysis



- **Can LLM's write a regression for you?**
- **Yes! But with some limits:**
- **You need to give the name and type (Excel, csv...) of the dataset, names and types of the dependent and independent variables**
- **LLM's perform worse with commercial software such as Stata - use open-source languages like R or Python instead.**
- **LLM's tend to write down common, standard approaches - unlikely to use newer approaches**

On coding with LLM's in general



- **From my experience, LLM's make coding faster**
- **However, the code they generate does not always work**
- **Sometimes, they generate code 'too complicated' - they are often trained to give long answers**
- **For more complex projects, they still require a human supervisor**

LLM's in the writing process



- **General rule: Never do something in a paper only because AI suggested it!**
- **Make sure you understand the literature, the methodology and the data**
- **Don't write things down that you don't understand or can't defend**

LLM's for idea creation



- **LLM's can be used for brainstorming**
- **You can prompt the LLM's to generate three research questions on a topic**
- **You can prompt three different LLM's - or a LLM in three different roles**
- **You can prompt a LLM to give arguments for or against something**

LLM's for style improvement



- **LLM's are very good at writing, particularly in English**
- **Write down your ideas in bullet points and ask the LLM to make a text out of it**
- **Prompt the LLM for improvements of a paragraph you're not content with**
- **Prompt the LLM to reformulate something three times**

What else is out there?



- **AI includes many, many fields...**
- **AI for quantitative estimation, for example image recognition (satellite data) or sentiment analysis**
- **Recognition of handwritten or scanned text (Image-to-Text)**
- **Recognition of speech (Speech-to-Text)**
- **Huggingface Spaces are community apps, may or may not work: [Huggingface Spaces](#)**

What else is out there? - Whisper



- **Whisper is a Speech-to-Text-AI**
- **I use it to digitalize handwritten notes and to dictate to my computer**
- **You can try it out online: [Whisper](#)**

Running Whisper locally



- For sensitive data, for example interview transcription, you might want to run Whisper locally
- aTrain by the University of Graz is specialized on working with interviews: [aTrain](#)
- Output compatible with qualitative analysis tools MAXQDA, ATLAS.ti and NVivo

Optical Character Recognition



- **OCR: Extracts text from scanned images or photos (Image-to-Text-AI)**
- **eScriptorium is used by universities and research institutes: [eScriptorium](#)**
- **Very professional, but difficult for individual users to set up (requires considerable computing power for training)**
- **Easier: Use of a Huggingface Space. Search for 'OCR' or other AI's you're interested in**

Some final words of caution



- **AI is still new, not all legal issues are settled**
- **Don't upload anything that you don't have the right to (text, pictures, audiofiles)**
- **Ask your supervisor if/how to cite AI's used**