Topic	Large Language Models are User Interfaces – Developing User-Centred Voice Assistants
Overview	Large Language Models have shown a remarkable ability to understand user intents and act on them. By fine-tuning foundation models on voice assistant use-cases, we can gain better control of interaction flows, and enable a larger range of interaction styles. A thesis in this area can focus on a variety of research directions: 1. **User Experience (UX) Research**: For one, we need to identify how to design smarter voice assistants. With the inception of large language models, a wider range of use-cases becomes feasible for voice assistants. In this area of research, you can analyse user needs, develop low-fidelity prototypes, evaluate them to gain insights about your design decisions, and apply them to large language models. 2. **Dataset Engineering**: To fine-tune large language models for voice assistant use-cases, we need large datasets of interaction examples. These can either be collected directly from humans, which is very costly and can lead to very noisy data, or design synthetic datasets that generate interactions from conversational building blocks. In this area, you can develop such datasets, and fine-tune state-of-the-art large language models on cutting-edge hardware. 3. **User Interface Design**: The user experience of voice assistants is not only defined by the behaviour of the language model, but also by its user interface. The way users interact with the voice assistant can have an immense impact. There are many mediums to consider, ranging from speaker boxes like Alexa/Google Home, or smartphone apps with a visual element, to robots, incorporating facial expression and gesturing, and a physical dimension to interactions.
Language	English or German

Exemplary literature	Murad, Christine, Heloisa Candello, and Cosmin Munteanu. "What's The Talk on VUI Guidelines? A Meta-Analysis of Guidelines for Voice User Interface Design." In Proceedings of the 5th International Conference on Conversational User Interfaces, pp. 1-16. 2023. Zhou, Chunting, Pengfei Liu, Puxin Xu, Srini Iyer, Jiao Sun, Yuning Mao, Xuezhe Ma et al. "Lima: Less is more for alignment." arXiv preprint arXiv:2305.11206 (2023). Schick, Timo, Jane Dwivedi-Yu, Roberto Dessì, Roberta Raileanu, Maria Lomeli, Luke Zettlemoyer, Nicola Cancedda, and Thomas Scialom. "Toolformer: Language models can teach themselves to use tools." arXiv preprint arXiv:2302.04761 (2023).

Additional information	Type of thesis: Bachelor or master thesis
	Start: next Month
	Requirements:
	    • Interest in User Experience Research and Artificial Intelligence
	    • For direction 2: good python programming skills
	    • Solid language skills in English
	
	Publication: Excellent work can be submitted and published as a conference paper or at TU Prints

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