

Call for Master Thesis at the Chair of Integrated Product Design (IPD)

TANGIBLE AI

Designing physical objects for human-AI interaction

Summary

For this master's thesis, you will design how people can use Generative AI (GenAI) more seamlessly in their everyday work tasks. Rooted in a human-centered AI approach (Shneiderman, 2020), you will explore a range of GenAI tools and delve into human-AI interaction and AI agent research. Based on that, you will develop concepts and prototypes showcasing novel human-GenAI interaction methods. Existing examples that can serve as a reference are physical interfaces for using GenAI (MIT Design Intelligence Lab, 2023), personal AI assistants like Rabbit r1 (Rabbit Inc., 2025), and embodiments of GenAI (LOOI Robot, 2025). You will design and build the medium – a GenAI-embodied product. Optionally, you can evaluate the effectiveness and user experience of the developed design to ensure they address the user's needs. Along the way, you will gain in-depth insights into how GenAI is reshaping our workflows while also creating more seamless and intuitive human-AI interaction for the future. In doing so, this thesis will extend GenAI theory and practice. If the outcome of your thesis allows, we will jointly publish the results in an academic design journal or conference proceedings.

Keywords: human-AI interaction, generative AI, product design, interaction design

Prerequisites

An enthusiasm for design and emerging technologies is essential. Familiarity with design software, such as Adobe, 3D modeling software, prototyping, 3d-printing, and other fabrication skills are required to design the physical objects for human-AI interaction. Experience with programming languages, such as Python or C++, along with experience using Arduino, would be beneficial. Experience with GenAI tools – such as ChatGPT, DeepSeek, or Midjourney – is recommended. Lastly, a basic understanding in scientific design research methods is helpful; if needed, this can be acquired by participating in the IPD Research Seminar or similar courses. For this topic, we consider students from the following programs: Computer Science, HCI, Mechanical Engineering, Human Factors Engineering, and Architecture (students from other programs upon request).

Provided Resources

We will provide you with access to some GAI tools for developing and testing your design. A small budget will be allocated for prototyping the object. The actual thesis will be rather self-directed. We offer 3 personal meetings throughout the thesis progress in a joint colloquium with other thesis candidates, and on-demand consultations when needed.

How to Apply

If you are interested in conducting this thesis at our chair, please send an email to thesis.ipd@ed.tum.de with reference line "**Master Thesis: Tangible AI**". Please state in your email your preferred starting date, your motivation for the topic, and attach your resume and some portfolio samples. Based on the provided materials we will invite you for a first meeting to discuss further.

Key References

Shneiderman, B. (2020). Bridging the gap between ethics and practice: guidelines for reliable, safe, and trustworthy human-centered AI systems. *ACM Transactions on Interactive Intelligent Systems (TiiS)*, 10(4), 1-31.

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