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

# OUTSOURCING IMAGINATION

## Detecting imaginative disengagement during creative work with generative AI

## Summary

Generative AI is often seen as a way to approach faster creative output: type a prompt, receive a solution. This raises a concern that is widely voiced but rarely measured: at some point during a GenAI conversation, creatives may quietly hand over their imagination to the AI, shifting from generating their own ideas to merely accepting the AI's, and outsourcing the effortful work of imagination without noticing (Dreyer et al., 2026; Risko & Gilbert, 2016). This thesis develops a method to detect handovers and identify their triggers. Creatives will complete a design futuring task with a GenAI tool, building on the AI-supported futuring method developed at our chair (Thoring et al., 2027), in which imagination is central to the exercise and cognitive offloading is a particular concern. The full interaction will be captured and coded turn by turn (types of prompts, types of AI responses, patterns of acceptance and rejection), building an inductive coding scheme for human-AI creative exchange. Eye-tracking is layered onto this analysis to detect imaginative disengagement in real time (Aruon et al., 2025): pupil dilation as an index of mental effort, fixation and blink patterns as markers of active engagement versus passive scanning (Kiefer et al., 2017). By aligning the coded interaction with the physiological signal, the thesis identifies which patterns of AI interaction coincide with drops in imaginative engagement, producing not only evidence that the handover occurs but a mechanistic account of what precedes it. The contribution is twofold: a coding scheme for human-AI creative interaction, and empirical evidence for the interaction patterns that trigger imaginative disengagement. 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, Imagination, Eye-Tracking, Interaction Coding, Design Futuring, Cognitive Offloading

## Prerequisites

An interest in human-AI interaction, design cognition, and design futuring is essential. You should bring a willingness to work with generative AI tools, openness to qualitative coding methods (or willingness to learn), and openness to eye-tracking methods. A solid understanding of scientific research methods is helpful; if needed, this can be acquired through the IPD Research Seminar. For this topic, we consider students from the following programs: Human Factors Engineering, Human-Computer Interaction, Informatics, Management, Consumer Science, and Information Systems (students from other programs upon request).

## Provided Resources

You will have access to our creative space lab, our Pupil Labs eye-tracking system, sample futuring briefs and materials from ongoing chair work, and GenAI tools for the study setup. The thesis will be rather self-directed. We offer 3 personal meetings throughout the thesis progress in a joint colloquium with other thesis candidates, plus 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: Outsourcing Imagination"**. Please state your preferred starting date and motivation for the topic in your email, and attach your resume and some portfolio samples. Based on the provided materials, we will invite you for a first meeting to discuss further.

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## Key References

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Risko, E. F., & Gilbert, S. J. (2016). Cognitive Offloading. *Trends in Cognitive Sciences*, *20*(9), 676–688. https://doi.org/10.1016/j.tics.2016.07.002

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