

# Expanding the Thinkable Territory by Building AI Tools Inspired by Optical Instruments



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## Abstract

As we transition into the AI era, we have an opportunity to shape the values, experience, and impact we wish to cultivate through our design and lay the foundation for how AI can best serve individuals and society at large. In this talk, I argue for the development of AI tools that empower us to think and understand in new and more powerful ways by drawing inspiration from optical instruments. I will present my recent projects that exemplify this vision, demonstrating how we can expand the scope of our creativity and intelligence by allowing people to explore design space, information space, and representation space using generative AI, multi-level navigation, and layered representations. Concretely, the first project will introduce a novel framework for interacting with large language models (LLMs), addressing the limitations of the current prompt engineering approach, which guides users to rapidly converge on a limited set of potentially suboptimal ideas, instead of empowering them to explore the vast latent design space in generative models; the proposed interaction facilitates the structured generation of design space in which users can seamlessly explore, evaluate, and synthesize a multitude of responses. Secondly, I will present a novel interface and interaction that enables users to flexibly explore the information space using LLMs. Finally, I will present CodeToon, a system that can automatically generate comics from computer code, developed to lower the barrier in programming education and explore the design challenges in generating the layers of corresponding representations of varying concreteness.

## Speaker

Sangho Suh is a Postdoctoral Fellow in the Dynamic Graphics Project (DGP) Lab at the University of Toronto. Previously, he was a Postdoctoral Scholar in the Design Lab at UC San Diego, and holds a Ph.D. in Computer Science from the University of Waterloo. His research focuses on generating new forms of interaction and interfaces for AI and developing innovative educational tools, with particular attention to augmenting our collective creativity and intelligence and making complex information, knowledge, and systems accessible. He is a Finalist for the Adobe Research Fellowship and a recipient of best paper awards at Data Mining and Human-Computer Interaction conferences.

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