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*Imagination Amplification: Empowering creativity with optimization algorithms in computer graphics*

Optimization algorithms are at the heart of the many "smart" tools that now define modern computer graphics and 3D design. In this talk we go on a guided tour through some of the optimization problems that enable intelligent image editing, 3D modeling of clothes, architecture and mechanisms, and physics-based models of motion. At their heart are a rich variety of discrete and continuous optimization problems. We describe how optimization algorithms provide the key ingredients for rapidly "baking" better and smarter tools. In the end, these tools allow for new and exciting ways for human and computers to work together as "co-designers" in ways that were simply not possible before.