

## Prototyping Complex Microscopy Imaging Pipelines

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### Abstract

In this talk, I will discuss our efforts to integrate and customize commercial and open source tools for acquiring, processing, and analyzing images to study developing organisms in vivo. While many constraints that guided implementation choices were directly related to system performance, such as speed, scalability, portability, stability, or cost, others were linked to programmer skills or end-user preferences. Modular software tools, capable of interfacing with multiple software packages proved particularly useful for rapid system prototyping. I will illustrate these points with examples from digital holography, tomography, and in vivo high-speed and time-lapse imaging of the developing heart.

### Biography



Michael Liebling is an Assistant Professor in the Department of Electrical and Computer Engineering at the University of California, Santa Barbara (UCSB) since 2007. He graduated from École Polytechnique Fédérale de Lausanne, Switzerland, with an MS in Physics (2000) and a PhD for a dissertation on Digital Holography and Image Processing that he completed under the advisory of Prof. Michael Unser (2004). From 2004 to 2007, he was a Postdoctoral Scholar in the lab of Prof. Scott E. Fraser at the Biological Imaging Center, Beckman Institute, California Institute of Technology.

At UCSB, his research focuses on biological image acquisition, reconstruction, processing, and analysis. His lab develops microscopy instrumentation and imaging protocols along with the computational tools to observe and analyze embryonic morphogenesis in vivo.