Faculty Candidate, Electrical Engineering Open Search

White-Box Computational Imaging: Measurements to Images to Insights

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Abstract
Computation and machine learning hold tremendous potential to improve the quality and capabilities of imaging methods used across science, medicine, engineering, and art. Despite their impressive performance on benchmark datasets, however, deep learning methods are known to behave unpredictably on some real-world data, which limits their trusted adoption in safety-critical domains. Accordingly, in this talk I will describe white-box, interpretable methods for photorealistic volumetric reconstruction that match or exceed the performance of black-box neural alternatives. I will also present recent theoretical results that guarantee correct and efficient reconstruction using our white-box approach in nonlinear computed tomography.

Bio
Sara Fridovich-Keil is a postdoctoral fellow at Stanford University, where she works with Mert Pilanci and Gordon Wetzstein on foundations and applications of machine learning and signal processing in computational imaging. She is currently supported by an NSF Mathematical Sciences Postdoctoral Research Fellowship. Sara received her PhD in electrical engineering and computer sciences in May 2023 from UC Berkeley, where she was advised by Ben Recht and supported by an NSF GRFP fellowship. Sara received her BSE in electrical engineering from Princeton University in 2018, where she was advised by Peter Ramadge and supported, in part, by a Barry Goldwater Scholarship.

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