



UCF

# FACULTY RESEARCH TALKS

LISTEN. LEARN. COLLABORATE.

Zoom talk | Friday, March 27, 2026 | Noon to 1 p.m.



**Presenter 1:**  
**ALI SIAKOOHI**  
**ASSISTANT**  
**PROFESSOR**  
Computer Science

## On the Role of Memorization in Learned Priors for Geophysical Inverse Problems

Learned priors based on deep generative models offer data driven regularization for seismic inversion, but training them requires a dataset of representative subsurface models, a resource that is inherently scarce in geoscience applications. Since the training objective of most generative models can be cast as maximum likelihood on a finite dataset, any such model risks converging to the empirical distribution, effectively memorizing the training examples rather than learning the underlying geological distribution. Ali Siakoochi shows that the posterior under such a memorized prior reduces to a reweighted empirical distribution, i.e., a likelihood-weighted lookup among the stored training examples.

Siakoochi received his doctoral degree in computational science and engineering from Georgia Institute of Technology in 2022 and spent three years as a postdoctoral fellow at Rice University's Department of Computational Applied Mathematics and Operations Research. His research focuses on uncertainty quantification in complex systems arising in computational science and engineering, with an emphasis on deep generative modeling models for real-world applications.



**Presenter 2:**  
**SHASHANK**  
**SONKAR**  
**ASSISTANT**  
**PROFESSOR**  
Computer Science

## AI for Education: Assessment, Tutoring and Modeling Student Thinking

This talk will present an education-focused AI research program developed through collaborations with discipline-based education researchers. Working across mathematics, physics and chemistry education, Shashank Sonkar studies how AI systems can better assess student work, support learning and model how students reason. He will examine when large language model (LLM) graders can be trusted; explore whether LLM-based math tutors teach misleading shortcuts, or "rules that expire," that may help students reach answers in the moment while weakening deeper conceptual understanding; and introduce FoundationalASSIST, a new educational dataset that supports research on knowledge tracing and pedagogical grounding.

Sonkar's research focuses on advancing AI reasoning capabilities and computational models of human cognition, with a particular emphasis on education. His work studies how AI systems can model student reasoning, identify knowledge gaps and misconceptions, and provide contextually appropriate support at scale. Spanning assessment, tutoring and student modeling, his research aims to build AI systems that are not only accurate, but also pedagogically grounded, interpretable and trustworthy for real educational use.