PhD opening at the Pennsylvania State University in porous media physics

The Mehmani Research Group has one opening for a fully funded PhD student starting Fall 2023 in the Department of Energy and Mineral Engineering (www.eme.psu.edu) at Penn State University. The successful candidate will conduct research on multiresolution imaging, modeling, machine learning, and characterization of geomaterials at multiple length scales.

The lab focuses on the fundamental physics of flow and deformation in porous media. Our goal is to bridge the controlling mechanisms rooted at the microscale to the emergent behaviors observed at the macroscale. A core part of our activities is directed towards devising multiscale algorithms and experimental imaging techniques that probe microscale processes and translate useful insights into Darcy-scale information. Our interests are driven by applications of porous media in energy and the environment. They include subsurface technologies such as H_2 storage, CO_2 sequestration, geothermal energy, natural gas, and manufactured devices such as fuel cells and batteries. Students will have the opportunity to contribute to questions of global and societal importance. Find more information at www.mehmaniresearchgroup.com.

A candidate with a strong background in one or more areas of image analysis, machine learning, programming, hyperspectral data acquisition and processing, computational physics (fluid/solid mechanics), and applied mathematics is sought. A MSc degree is a plus but not a requirement. The student will develop new workflows for characterizing and modeling geologic porous media that have extreme heterogeneity using multiscale imaging, machine learning, and physics-based modeling. They will have the opportunity to conduct experiments and modeling, and collaborate with interdisciplinary researchers with engineering and geoscientific backgrounds. The student will also have access to state-of-the-art imaging and characterization equipment in our lab.

To apply, please contact Yashar Mehmani via email (yzm5192@psu.edu) to discuss the research project. Attach the following to your email: unofficial transcripts, curriculum vitae, names and contacts of three references, and a brief personal statement that describes the candidate's motivation for joining the group and how they see their background fit the position. Applicants must meet the minimum admission requirements (link) set by The Graduate School and the EME department. **The application deadline for the Fall 2023 semester is January 5, 2023**. If the candidate plans to attend the upcoming American Geophysical Union (AGU) conference (Dec 11-16, 2022), in-person interviews and meetings can be arranged.

Yashar Mehmani is an assistant professor in the Department of Energy and Mineral Engineering (EME) at the Pennsylvania State University (link). He is also a co-funded faculty in the Institutes of Energy and the Environment (IEE) (link) and an affiliate of the Institute for Computational and Data Science (ICDS) (link). His research interests are broadly related to porous media flow and mechanics with a special focus on computing and scale translation. He received a BSc from Sharif University of Technology, Iran, followed by a PhD from the University of Texas at Austin. He was then a postdoctoral fellow and later a research scientist at the Energy Resources Engineering Department at Stanford University.