Objective: We are seeking a graduate research assistant (at the PhD level) with interest in mathematical data inversion with application to imaging in complex and unknown environments. Individuals with background (BS or MS) in Applied Mathematics, Physics, and Engineering Sciences are invited for consideration.

Project description: The goal of this project is to furnish real-time feedback on the nature of engineered processes (e.g., fracking) in unconventional geo-energy systems to enable closed-loop control of such systems. In this vein, a physics-based data analytics platform will be established to enable 3D in-situ imaging and characterization of (thermo-) hydro-mechanical evolution induced by fluid (or gas) injection in the subsurface. The proposed framework takes advantage of the most recent advances in applied mathematics, machine learning, geophysics, and sensor technology to develop a multiphysics data inversion solution that is fast and efficient for application to big data and real-time sensing, and is germane to complex subterranean environments whose properties are a-priori unknown. This research will potentially contribute to prudent development of enhanced geothermal systems as well as unconventional hydrocarbon reservoirs.

Funding: This project provides full funding for four years for a graduate research assistant, including full tuition coverage, health insurance, and a monthly stipend throughout the academic year and summer.

Instructions: The start date is flexible and may be set anytime between June 01 2020 to Jan 10 2021. If you are interested, please submit your CV to Dr. Fatemeh Pourahmadian at fatemeh.pourahmadian@colorado.edu.

Life at CU-Boulder: The University of Colorado Boulder is one of the most comprehensive and prestigious public universities in the United States. In particular, its graduate programs in Civil Engineering ranked 21 and in Applied Mathematics ranked 14 according to the U.S. News & World Report. The main campus is located at the heart of the Boulder metropolitan area, nestled at the base of Colorado’s Rocky Mountains. Boulder is the nirvana of outdoor activities because of its world-class destinations such as Eldorado Canyon, Chautauqua, and Valmont Bike Parks. Boulder is also home to many national laboratories and key tech/industrial companies such as NIST, NOAA, NREL, and Google.