



Contribution ID: 38

Type: **Poster Presentation**

## **Reconstruction of Highly-Heterogeneous Porous Media: Fractured Shale**

In the 3D reconstruction of micro CT scan images of porous media for heterogeneous samples (with fractures), the texture of the heterogeneous (fracture) space differs from that of the rock. In this type of problem, a new method should be provided for reconstructing the porous media. Some shale rock samples exhibit fractures of this type, and their reconstruction is considered here. In this research, two artificial intelligence algorithms are employed to reconstruct the pore space of shale. The first algorithm is based on a generative method (a type of generative adversarial neural network) to reconstruct the rock texture space. The second algorithm, which utilizes the output of the first algorithm, attempts to reconstruct the fracture space using a geometry-informed deep learning framework. The reconstruction results indicate a satisfactory level of quality in the reconstruction process.

### **Student presentation contest**

Not Interested

### **Journal Submission**

Consider for Journal Submission

### **Student Poster Contest**

Not Interested

**Primary author:** Dr SHAMS, Reza (Sharif University of Technology)

**Co-authors:** Prof. MASIHI, Mohsen (Sharif University of Technology); Prof. BLUNT, Martin (Imperial College London); Prof. BOZORGMEHRY BOOZARJOMEHRY, Ramin (Sharif University of Technology)

**Presenter:** Dr SHAMS, Reza (Sharif University of Technology)

**Track Classification:** Geotechnique/Soil Mechanics