

Mohammad Hadi Mehranpour

CONTACT INFORMATION

Address: Rock Mass Modeling and Computational Rock Mechanics Laboratories, Room 211, Mines & Metallurgy building, The University of Arizona, Tucson, Arizona, 85721, USA

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EDUCATION

PhD., Mining, Geological & Geophysical Engineering Aug 2014 – Present

The University of Arizona, Tucson, Arizona, USA

GPA: 4.0/4.0

Thesis: Development of a new rock mass strength criterion for rock masses having non-orthogonal fracture system

M.Sc., Mining Engineering – Rock mechanics Sep 2009 – Sep 2012

The University of Tehran, Tehran, Iran

GPA: 18.2/20.0

Thesis: Study on shear behavior of rock joints by direct shear test under CNL & CNS boundary conditions tests

B.Sc., Mining Engineering – Exploitation Sep 2005- Sep 2009

The University of Tehran, Tehran, Iran

GPA: 17.2/20.0

Thesis: Investigation on creep behavior of soft rocks by compression tests

RESEARCH EXPERIENCE

Graduate Research Assistant Aug 2014 – Present

The University of Arizona, Tucson, Arizona, USA

- Laboratory geomechanical and geophysical testing of rock cores, faults and joints
- Developing contact models in the Particle Flow Code (PFC) package
- Investigation on intact rock failure criteria under polyaxial stress condition
- Numerical modelling studies on the stability of fractured rock masses
- Numerical modeling of Fracture mechanic tests by FEM

Graduate Research Assistant Sep 2009 – Aug 2014

The University of Tehran, Tehran, Iran

- Investigation on impression creep and relaxation tests as the new time-dependent test methods
- Study on the influence of loading rate on the fracture toughness and the roughness of created surfaces on three point bending notched test
- Review on the roughness quantification methods for rock joints surface
- Research on finding rock toughness by scratching test and modeling that in FEM
- Brief review on the seismic stability of slop
- Investigation on rock failure by cutting tools

Undergraduate Research Assistant May 2007- Sep 2009

The University of Tehran, Tehran, Iran

- Design and simulation of underground mines and open pits by AutoCAD
- Prepare an educational software for the underground excavation course
- Estimating a mine mineral reserve by DATAMINE software
- Underground Salt mine surveying in Semnan, Iran
- Reduction of Iron and Calcite in Kaolin Zonouz mine

Research Assistant

Rock Mechanics Laboratory of The University of Tehran, Tehran, Iran

May 2007 – Aug 2012

FIELD EXPERIENCES

Undergraduate Research Intern

- Eastern Alborz Coal Mines Co. (EACMCO), Tazare Coal Mine, Shahroud, Iran Jun 2008 – Sep 2008
- Iran Water & Power Resources Co. (IWPCO), Azad Dam, Kurdistan, Iran Jun 2007 – Sep 2007

PUBLICATIONS AND CONFERENCES

Journal publications:

- **Mehranpour, M.H.**, Kulatilake, P.H.S.W. (2017). Improvements for the Smooth Joint Contact Model of the Particle Flow Code and its applications. *Computers and Geotechnics*. 87,163-177.
<http://dx.doi.org/10.1016/j.compgeo.2017.02.012>
- **Mehranpour, M.H.**, Kulatilake, P.H.S.W. (2016). Comparison of six major intact rock failure criteria using a particle flow approach under true-triaxial stress condition. *Journal of Geomechanics and Geophysics for Geo-Energy and Geo-Resources*. 2(4), 203-229. <http://dx.doi.org/10.1007/s40948-016-0030-6>

Conference publications and presentations:

- **Mehranpour, M.H.** (2016). Introduction of new roughness parameters to quantify rock joints surface using Fourier analysis. *50th US Rock Mechanics/Geomechanics Symposium; Houston, USA*.
- **Mehranpour, M.H.** (2016). Development of a failure criterion for rock masses having non-orthogonal fracture systems. *35th International Conference on Ground Control in Mining, Morgantown, WV, USA*.
- Tavanaei, F., **Mehranpour, M.H.**, Moosavi, M. (2014). The comparison of impression and relaxation creep tests with different diameter of indenter in salt rock. *The Eurock 2014 ISRM international symposium on Rock mechanics structures on and in rock masses; Vigo, Spain*.
- Moosavi, M., Rafsanjani, H.N., **Mehranpour, M.H.**, Nazem, A., Shirazi, A.N. (2013) An investigation of surface roughness measurement in rock joints with a 3D scanning device. *Rock Characterization, Modelling and Engineering Design Methods*. 119-125.
- **Mehranpour, M.H.**, Rassouli, F.S., Moosavi, M. (2012). The impression relaxation test, a new relaxation method for determination the time dependent characteristics of rock salt. *The 46th US Rock Mechanics /Geomechanics Symposium; Chicago, USA*.
- Rassouli, F.S., **Mehranpour, M.H.**, Moosavi, M. (2012). Study of Punch Tip Effect on Creep of Materials in Impression Test. *The 46th US Rock Mechanics/Geomechanics Symposium; Chicago, USA*.
- Rassouli, F.S., **Mehranpour, M.H.**, Moosavi, M. (2012). Using Multistage Creep Tests to Determine the Parameters of Power Law Creep Equation. *The Eurock 2012 symposium on Rock Engineering and Technology for Sustainable Underground Construction; Stockholm, Sweden*.
- Rafsanjani, H.N., **Mehranpour, M.H.**, Moosavi, M. (2011). The construction of rock joints surface scanner apparatus. *3rd International and 12th National Conference on Manufacturing Engineering; Tehran, Iran (In Farsi and English Abstract)*.
- Rassouli, F.S., **Mehranpour, M.H.**, Moosavi, M. (2011). A comparison between compression and impression creep techniques using finite element method. *The 9th Euroconference on Rock Physics and Geomechanics, Trondheim, Norway*.

- Rassouli, F.S., Moosavi, M., **Mehranpour, M.H.** (2010). The effects of different boundary conditions on creep behavior of soft rocks. *The 44th U.S. Rock mechanics symposium & 5th U.S. Canada symposium, Salt Lake City, Utah, USA.*

TECHNICAL SKILLS

Programing languages:

Fish, Python

General engineering tools:

MATLAB, ANSYS, COMSOL, AutoCad, Microsoft Office - Word, Excel, PowerPoint

Geomechanical modeling tools:

PFC, FLAC, 3DEC, Plaxis 2D, Rocscience Suite (Geomechanical modeling), Petrel (Exporation & Production)

TEACHING AND MENTORING EXPERIENCES

Teaching:

The University of Tehran, Tehran, Iran

- Rock mechanics Sep 2010 – Jan 2014
- Tunnel and shaft excavation Jan 2009 – May 2013
- Designing surface and underground mines with AutoCAD Sep 2010 – May 2012
- Mine reinforcement Jan 2007 – May 2007

Mentoring:

The University of Tehran, Tehran, Iran

- F.Tavanaei's mentor in the thesis title of: *Investigation on relaxation behavior of rock salt by impression tests* Jan 2012 – Sep 2012
- H.Naebvali's mentor in the thesis title of: *An investigation on the loading rate effect on the rock fracture toughness and the roughness of created rock joint surfaces in three point bending notch test* Jan 2012 – Sep 2012
- H.N.Rafsanjani's mentor in the thesis title of: *Design the three dimensional rock joint surface laser scanner* Jan 2011 – Sep 2011
- F.Saffariyan's mentor in the thesis title of: *Design shear boxes for CNL and CNS tests in MTS* Jan 2011 – Sep 2011

CONSTRUCTED APPARATUS

The University of Tehran, Tehran, Iran

- Rock Joint Surface 3D laser Scanner (in collaboration with H.N.Rafsanjani) 2011
- Developing shear box of CNL & CNS tests for MTS (in collaboration with F.Saffariyan) 2011
- Impression relaxation apparatus 2010
- Compression creep apparatus 2009

AWARDS AND HONORS

- Society for Mining, Metallurgy and Exploration Tucson Scholarship 2016
- The Women's Auxiliary to the American Institute of Mining, Metallurgical and Petroleum Engineers Scholarship 2015 & 2016
- Graduate and Professional Students' Council Travel Grant award for attending the American Rock Mechanics Association Conference in Houston 2016
- Environmental Graduate Student Travel award for attending the American Rock Mechanics Association Conference in Houston 2016
- Superior thesis in mining engineering department, the University of Tehran, Iran 2013

- Ranked 1st among the master students in mining engineering department, the University of Tehran, Iran 2013
- Graduate Student Scholarship for master degree in mining engineering department, the University of Tehran, Iran 2009
- Ranked 1nd among the undergraduate students in mining engineering department, the University of Tehran, Iran 2009
- Faculty of engineering award for the top student in faculty of engineering, the University of Tehran, Iran 2007 & 2008

VOLUNTEERING AND OUTREACH

- Graduate and Professional Students' Council Travel Grants Judge, The University of Arizona 2016 – Present
- Reviewer of the US Rock Mechanics/Geomechanics Symposium 2015 – Present
- An organizing committee member of the 8th Students Mining Engineering Conference, Tehran, Iran 2011

MEMBERSHIPS AND PROFESSIONAL AFFILIATIONS

- American Rock Mechanics Association (ARMA)
- Society for Mining, Metallurgy and Exploration (SME)
- Iranian Society of Rock Mechanics

WORKSHOPS ATTENDANCE

- Moon Mining, organized by IRTA, presented by Dr. Rostami in Tehran, Iran, 2012.
- NATM Training Course & Ground Improvement, organized by IRTA, presented by Dr. G. Barla, Tehran, Iran, 2011.
- Rock Engineering for Drilling-and-Blast and TBM Tunneling, and Important Aspects of Rock Joints and Rock Mass Behavior, organized by IRSRM, presented by Dr. N. Barton, Tehran, Iran, 2008.
- Comprehensive Management: Planning and Engineering, organized by the University of Tehran, Tehran, Iran, 2007.