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# Mohammad Sarraf Joshaghani

## Education

2015–present **Ph.D., Civil Engineering**, ***University of Houston***, Houston, TX, United States.
Expected graduation date: **August 2019**
Thesis title: *Stabilized mixed discontinuous Galerkin formulation for modeling flow in double porosity/permeability model.*
Supervisor: Dr. K. B. Nakshatrala

2012–2014 **M.Sc., Civil Engineering**, ***University of Houston***, Houston, TX, United States.
Thesis title: *Full-scale testing and numerical Modeling of subsea pipe soil interaction.*
Supervisors: Dr. C. Vipulanandan
Committee: Dr. K. B. Nakshatrala & Dr. G. J. Lim

2008–2012 **B.Sc., Civil Engineering**, ***Azad University of Mashhad***, Mashhad, Iran.

## Selected Publications

PEER-REVIEWED

1 **M. S. Joshaghani**, J. Chang, K. B. Nakshatrala, and M. G. Knepley On composable block solvers and performance spectrum analysis for double porosity/permeability model *Available on arXiv:1808.08328*, 2018. [arXiv link]

2 **M. S. Joshaghani**, S. H. Joodat, and K. B. Nakshatrala A stabilized mixed discontinuous Galerkin formulation for double porosity/permeability model *Available on arXiv:1805.01389*, 2018. [arXiv link]

3 A. M. Raheem, C. Vipulanandan, and **M. S. Joshaghani** Non-destructive experimental testing and modeling of electrical impedance behavior of untreated and treated ultra-soft clayey soils *Journal of Rock Mechanics and Geotechnical Engineering* 9(3):543-550, 2017. [Journal link]

4 M. M. R. Mousavi, M. D. Champiri, **M. S. Joshaghani**, and S. Sajjadi A kinematic measurement for ductile and brittle failure of materials using digital image correlation *AIMS Materials Science* 3(4):1759-1772, 2016. [Journal link]

5 A. M. Raheem, and **M. S. Joshaghani** Modeling of shears strength-water content relationship of ultra-soft clayey soil. *International Journal of Advanced Research* 4(4):537-545, 2016. [Journal link]

6 **M. S. Joshaghani**, A. M. Raheem, and M. M. R. Mousavi Analytical modeling of large-scale testing of axial pipe-soil interaction in ultra-soft soil *American Journal of Civil Engineering and Architecture* 4(3):98-105, 2016. [Journal link]

7 C. Vipulanandan, J. A. Yahouide, and **M. S. Joshaghani** Deepwater axial and lateral sliding pipe-soil interaction model study *Pipelines 2013: Pipelines and Trenchless Construction and Renewals–A Global Perspective* :1583–1592, 2013. [Journal link]

In preparation

1 K. B. Nakshatrala, and **M. S. Joshaghani** On interface conditions for flow in coupled free-porous media.

2 K. B. Nakshatrala, **M. S. Joshaghani**, and M. Shabouei A posteriori criterion based on Noether's theorem to assess accuracy of numerical solutions for diffusion equations.

3 **M. S. Joshaghani**, A. M. Raheem, and C. Vipulanandan Large-Scale Testing and Numerical Modeling of Axial Pipe-Soil-Interaction in Ultra-Soft Wyoming Bentonite.

## Conference Presentations

1 **M S. Joshaghani**, and C. Vipulanandan. A stabilized mixed DG formulation for flow in porous media with double pore-networks *Engineering Mechanics Institute (EMI) Conference*, Boston, MA, May 2018. [oral and poster presentation]

2 **M S. Joshaghani**, and A. M. Raheem. Finite element simulation of deep-water pipe walking phenomenon on ultra soft soil *American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, December 2014. [poster presentation]

3 **M S. Joshaghani**, and C. Vipulanandan. Testing and modeling of fixed and rolling buoyancy sections *Center for Innovative Grouting Material and Technology (CIGMAT) Conference*, Houston, TX, March 2014. [poster presentation]

4 **M S. Joshaghani**, M. R. Gharib, and S. Khatibmasjedi Modeling and control of an offshore steel jacket platforms using robust controller *ASCE Centennial Conference*, Dallas, TX, September 2013. [oral presentation]

5 **M S. Joshaghani**, and C. Vipulanandan. Finite element simulation of deep-water pipe walking phenomenon on ultra soft soil *Texas Hurricane Center for Innovative Technology Conference*, Houston, TX, August 2013. [poster presentation]

6 **M S. Joshaghani**, and C. Vipulanandan. Axial and lateral sliding of pipe on simulated seabed soft soil *Center for Innovative Grouting Material and Technology (CIGMAT) Conference*, Houston, TX, March 2013. [poster presentation]

## Teaching Experience

**Workshop instructor at University of Houston**

- *"Solving PDEs in Python: A FEniCS tutorial"*, UH Center for Advanced Computing and Data Science (CACDS), Houston, TX, June 2018.
- *"CFD Code Development Frameworks"*, UH Center for Thermo-Fluid Mechanics (CTFM), Houston, TX, September 2018.

**Teaching assistant at University of Houston**

Spring 2018 Statics
Fall 2017 Matrix analysis
Spring 2017 Statics
Fall 2016 Solid mechanics

## Work Experience

August 2015–present **Research assistant**, University of Houston, Houston, TX.

- *Developing a theoretical/computational framework for modeling flow in porous media with coupled double pore-networks.*
- *Proposing a composable block solvers and performance spectrum analysis for double porosity/permeability model.*
- *Developing a theoretical/mechanistic framework for obtaining the interface condition for porous-fluid domains, employing dissipation theorem and calculus of variations.*
- *Mathematical modeling of the hemodynamic forces and vascular morphology of the cerebral aneurysm.*

November 2014–January 2015 **Structural engineer**, Odebrecht Group, Houston, TX.

- *Reviewed designs and drafts of structural components of* 1.1 *miles of Grand parkway-SH99 bridges, and performed structural analysis for pre-stressed concrete beams sitting on different caps.*
- *Provided an interface with design group and resolve non-conformity-reports for superstructures.*

September 2014–November 2014 **Intern**, EDI Building Consultants Co., Houston, TX.

- *Analysis and design of steel connections for Williams Tower penthouse roof.*
- *Structural and damage assessments for Houston Club implosion on Esperson building.*

August 2012–August 2014 **Research assistant**, University of Houston, Houston, TX.

- *HPHT subsea pipelines, thermal buckling, full scale testing and mitigation solutions.*
- *Developing CEL and ALE models of pipe-soil interaction and offshore infrastructures, finite element code development.*
- *Nonlinear finite element analysis of touchdown zone in steel catenary riser and structural stability of spar platform.*
- *Modeled and characterized hydraulic fracturing fluid with nano silica proppant.*

April 2011–January 2012 **Intern**, Khorasan Beton Sole Construction Co, Mashhad, Iran.

- *Analysis and design of steel connections for Williams Tower penthouse roof.*
- *Structural and damage assessments for Houston Club implosion on Esperson building.*

April 2011–January 2012 **Intern**, Khorasan Beton Sole Construction Co, Mashhad, Iran.

- *Analysis and design of steel connections for Williams Tower penthouse roof.*
- *Structural and damage assessments for Houston Club implosion on Esperson building.*

December 2009–March 2012 **ESL teacher**, Mehrsajjad English institute, Mashhad, Iran.

- *Instituted classroom management strategies and interactive atmosphere for students of English as a second language.*

## Computer skills

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| Programming Languages | C/C++, FORTRAN, LaTeX, MATLAB, Python, shell |
| Scientific libraries | FEniCS/Firedrakes Projects, OpenFOAM, Palablos, Numpy, OpenMP |
| Commercial softwares | ABAQUS, COMSOL, SAP, PLAXIS |
| Visualization Packages | AutoCAD, ParaView, VisIt |

## Languages

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| Persian | Native Speaker. |
| English | Fluent. |

## Awards & Honors

2018 **Winner of computational mechanics student competition.**
Engineering Mechanics Institute, Massachusetts Institute of Technology

2017-2018 **Future Faculty Program Fellowship.**
Cullen college of engineering, University of Houston

2018-present **Center for Advanced Computing and Data Science Fellow.**
University of Houston

2015-present **UH Doctoral Student Tuition Fellowship.**
University of Houston

2015-2017 **Houston Endowment and Presidential Fellowship.**
Cullen college of engineering

2013-2014 **Graduate Assistant Tution Fellowship (GATF).**
University of Houston

2012-2014 **Graduate Leadership Scholarship Fellowship.**
University of Houston

2003 **Awarded best K-12 student paper.**
Iranian national competion for K-12 students, National Organization for Development of Exceptional Talents

## References

- Professor Kalyana Babu Nakshatrala
  Department of Civil & Environmental Engineering
  N124 EB1
  University of Houston, Houston, Texas 77204–4003
  Phone: 713-743-4418
  Email: knakshatrala@uh.edu

- Professor. Cumaraswamy Vipulanandan
  Department of Civil & Environmental Engineering
  N133 EB1
  University of Houston, Houston, Texas 77204–4003
  Phone: 713-743-4278
  Email: cvipulanandan@uh.edu

*(Additional references available upon request.)*