

ALI SAMII

CONTACT INFORMATION

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RESEARCH EXPERIENCES

Continuous and discontinuous finite element modeling of solids and fluids, hybridized finite element methods, wave propagation in elastic and acoustic media, Nonlinear dispersive water wave modeling, soil-structure interaction, fluid-structure interaction, nonlinear conservation laws.

EDUCATION

The University of Texas at Austin, Austin, TX

- Ph.D., Computational Mechanics, **Sept. 2013– May 2017**
- Dissertation Topic: *Hybridized discontinuous Galerkin method for fully nonlinear dispersive water waves.*
 - Adviser: Professor Clint Dawson

Amirkabir University of Technology, Tehran, Iran

- Ph.D., Structural Engineering, **Sept. 2007– Feb. 2012**
- Thesis Topic: *High-order absorbing boundary condition in elastodynamics and its application in soil–structure interaction problem.*
 - Adviser: Professor Vahid Lotfi

- M.Sc., Structural Engineering, **2003–2005**
- Thesis Topic: *Modal analysis of coupled fluid-structure systems by means of their decoupled modes.*
 - Adviser: Professor Vahid Lotfi

- B.S., Civil Engineering, **1999–2003**

PROFESSIONAL EXPERIENCE

The University of Texas at Austin, Austin, TX.

- Postdoctoral Fellow.* **May 2017 to Now**
- Working with Profs. Clint Dawson and Irene Gamba.
- Research Assistant* **Sept. 2013 to May 2017**
- Working with Prof. Clint Dawson.

Mahab Ghodss Consulting Engineering, Tehran, Iran.

- Analysis and design of concrete dams and structures.* **Aug. 2006 to Sept. 2013**
- Structural analysis of Bakhtiary arch dam, phase 2 studies (Height: 325 m, Location: Iran)
 - Structural analysis of Khersan II arch dam, phase 1 and 2 studies (Height: 240 m, Location: Iran).
 - Structural analysis of Puhula-Pola and Dyrabaa gravity dams, phase 1 and 2 studies of Oma-Oya multi-purpose project (Location: Sri-Lanka).

REFEREED
JOURNAL
PUBLICATIONS

- A. Samii, C. Michoski and C. Dawson. A parallel and adaptive hybridized discontinuous Galerkin method for anisotropic nonhomogeneous diffusion. *Computer Methods in Applied Mechanics and Engineering*. 2016. doi:10.1016/j.cma.2016.02.009.
- A. Samii, N. Panda, C. Michoski and C. Dawson. A hybridized discontinuous galerkin method for the nonlinear Kortewegde Vries equation. *Journal of Scientific Computing*. 2015. doi:10.1007/s10915-015-0133-1
- A. Samii and V. Lotfi. A high-order based boundary condition for dynamic analysis of infinite reservoirs. *Computers and Structures*. 120C:65–76. 2013. doi:10.1016/j.compstruc.2013.02.002
- A. Samii and V. Lotfi. High-order adjustable boundary condition for absorbing evanescent modes of waveguides and its application in coupled fluid–structure analysis. *Wave Motion*. 49:238–257. 2012. doi:10.1016/j.wavemoti.2011.10.001
- A. Samii and V. Lotfi. Application of the H-W boundary condition in dam–reservoir interaction problem. *Finite Elements in Analysis and Design*. 50:86–97. 2012. doi:10.1016/j.finel.2011.08.025
- V. Lotfi and A. Samii. Dynamic analysis of concrete gravity dam-reservoir systems by Wavenumber approach in the frequency domain. *Earthquakes and Structures (Special issue in honor of Prof. J. Roesset)*, 3:533–548.
- A. Samii and V. Lotfi. Comparison of coupled and decoupled modal approaches in seismic analysis of concrete gravity dams in time domain. *Finite Elements in Analysis and Design*. 43:1003–1012. 2007. doi:10.1016/j.finel.2007.06.015.

JOURNAL
PUBLICATIONS
UNDER REVIEW

- A. Samii and C. Dawson. A Review of nonlinear Boussinesq-type models for coastal ocean modeling. *Under review for publication*. 2017.
- A. Samii and C. Dawson. An explicit hybridized discontinuous Galerkin method for Serre-Green-Naghdi wave model. *Under review for publication in Computer Methods in Applied Mechanics and Engineering*. 2017.

CONFERENCE
PROCEEDINGS

- C. Michoski, C. Dawson, M. Bremer and A. Samii. Stabilizing/optimizing fluvial-shallow water systems with discontinuous Galerkin methods. European Congress on Computational Methods in Applied Sciences and Engineering, June 5–10, 2016. Crete Island, Greece.
- J. Proft, C. Dawson and A. Samii. Hybrid discontinuous Galerkin methods for shallow water wave models. Computational Methods in Water Resources, June 20-24, 2016. Toronto, Canada.
- Samii, A. and V. Lotfi. Application of high-order absorbing boundary condition in dynamic analysis of fluid-structure systems. In: *Proceedings of the 15th World Conference on Earthquake Engineering*. Sept. 24–28, 2012. Lisbon, Portugal. e-Poster.
- Lotfi, V. and A. Samii. Frequency Domain Analysis of Concrete Gravity Dam-Reservoir Systems by Wavenumber Approach. In: *Proceedings of the 15th World Conference on Earthquake Engineering*. Sept. 24–28, 2012. Lisbon, Portugal. e-Poster.
- Samii, A. and V. Lotfi. Dynamic analysis of concrete gravity dams by coupled and decoupled modal approaches. In: *Proceedings of the 7th International Congress on Civil Engineering*. May 8–10, 2006. Tehran, Iran. Oral presentation.

OTHER
PUBLICATIONS

Samii, A. *High-order non-reflecting boundary condition in elastodynamics and its application in soil–structure interaction problem*. Ph.D. thesis, Amirkabir University, Tehran, Iran, 2012.

Samii, A. *Modal analysis of coupled fluid–structure systems by means of decoupled modes of fluid and solid domains*. M.Sc. thesis, Amirkabir University, Tehran, Iran, 2005.

TEACHING
EXPERIENCE

Teaching Assistant – The University of Texas at Austin

- Instructor for Dynamics: **Jan. 2014 to May 2014**
Responsible for a 1.5 hour weekly teaching session, and grading quizzes and exams.

Teaching Assistant – Amirkabir University of Technology

- Instructor for Strength of Materials II: **Sept. 2007 to Jan. 2010**
Responsible for a 1.5 hour weekly teaching session, and 25% of the final grade.

SOFTWARE
SKILLS

Computer Programming:

- C++ and C#, Fortran, Python, MATLAB.

Programming Libraries:

- deal.II, MPI, PETSc, Matplotlib, SciPy, NumPy, OpenMP, MTL.

Productivity Applications:

- \TeX (\LaTeX , \BibTeX), CoreDRAW, and other common productivity applications.

CONTRIBUTION TO
PUBLIC-DOMAIN
SOFTWARE

- **deal.II**: I contributed to the development of **periodic neighbor** API in CellAccessor class in deal.II finite element library.
- **nargil**: Designed and developed a set of software tools for solving PDEs using hybridized discontinuous Galerkin method. **nargil** is a C++ code with focus on performance and development flexibility. It is capable of distributed parallel computation and adaptive mesh refinement.
- **ADCIRC** interpolation module: Developed the ADCIRC interpolation module to improve the performance of ADCIRC free surface circulation and transport model.

REFERENCES

Dr. Clint Dawson (e-mail: clint@ices.utexas.edu; phone: +1-512-475-8627)

- Professor, Aerospace Engineering and Engineering Mechanics, The University of Texas at Austin.
- *Professor Dawson is my Ph.D. advisor in UT Austin. He received his Ph.D. in mathematical sciences from Rice university.*
- Address: POB 6.430, The University of Texas at Austin, Austin, TX, USA.

Dr. Craig Michoski (e-mail: michoski@gmail.com; phone: +1-512-232-7780)

- Research Scientist, Institute for Computational Engineering & Sciences, The University of Texas at Austin.
- Address: POB 6.426, The University of Texas at Austin, Austin, TX, USA.

Dr. Vahid Lotfi (e-mail: vahlotfi@aut.ac.ir; phone: +98 21 6454 3017)

- Professor, Civil and Environmental Engineering Department, Amirkabir University of Technology.
- *Professor Lotfi was my M.Sc. and Ph.D. advisor in Amirkabir University. He received his B.Sc., M.Sc. and Ph.D. from The University of Texas at Austin.*

- Address: 617, Civil and Environmental Engineering Department, Amirkbair University of Technology, Hafiz Ave., Tehran, Iran.

WORK STATUS I was born in Iran, and I am a permanent resident of the United States (US Green Card holder, Category E26).