ABBAS HOOSHMAND

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SUMMARY OF QUALIFICATIONS

- Skilled in GIS programming, ArcGIS and open source Python GIS libraries
- Proficient in Python, MATLAB, R, Java, C#, FORTRAN, SQL & Linux
- Skilled at statistical and predictive modeling, analysis and manipulation of big data sets
- Experienced in fluid dynamics, numerical and analytical modeling of nearshore hydrodynamics
- Experienced in applying Machine Learning techniques
- Experienced and passionate about visualization tools (ggplot2 and Matlplotlib libraries)

JOB EXPERIENCE

- **Wave modeler intern at U.S. Geological Survey**, Apr 2015 - Present
  Examined oceanographic processes and climate change impacts to coastal habitat ecology
  - Investigated global and regional sea level rise and vertical land movement in US west coast and Hawaii
  - Assessed the risk of wave inundation in Skagit Bay, WA using a Delft3D-XBeach model

- **Model Developer Intern at Risk Management Solutions, Inc.**, Jun 2014 - Sep 2014
  Performed spatial statistical analysis on 2010 Tennessee flood for RMS US flood historical data reconstruction.
  - Derived historical flood extents from satellite imagery with Python
  - Prepared input data and ran RMS flood model for 2010 Tennessee flood
  - Performed statistical analysis on flood inundations from model output and satellite imagery
  - Updated levee and defense information with applying Machine Learning techniques

- **Research Assistant at University of Washington**, Sep 2009 - Mar 2015
  Advisor: Dr. Alexander R. Horner-Devine
  Performed experimental research to predict sediment transport due to surface waves in shallow parts of inner continental shelves.
  - Designed and constructed the inlet settings for the wave flume
  - Developed an analytical solution based on NS equations for prediction of down-slope velocity in shelves
  - Conducted experiments in the lab and validated the analytical model
  - Performed a thorough comparison between experiments, analytical model and field observations

EDUCATION

University of Washington, Seattle, WA
PhD in Civil and Environmental Engineering, Dec 2014
Minor in **Statistics** and **Machine Learning**
Dissertation title: Sediment transport due to surface waves in continental shelves

Sharif University of Technology, Tehran, Iran
BS in Mechanical Engineering, Mar 2009

CERTIFICATES

University of Washington, Seattle, WA
Certification in Data Science, Expected Sep 2015

SELECTED PROJECTS

- **Risk assessment of sea level rise in Seattle**, Sep - Dec 2013
  Assessed the risk of recurrent flooding caused by sea level rise in Seattle's South Park neighborhood adjacent to the Duwamish River within 50-100 years
  - Determined the vulnerable areas using sea level predictions from Seattle Public Utilities
  - Introduced a qualitative risk formula containing hazard probability, exposure, consequences & resilience
  - Designed dose-response curves and a risk matrix for sea level rise risk assessment

COMPUTER SKILLS

- *Programming:* Python, Java, C#, Fortran & Bash
- *Software:* R, Matlab, Microsoft Office (Excel, Power Point, Word) & LaTeX
- *Operating Systems:* Mac OS, Linux & Windows.

HONORS

- Research Assistantship at the University of Washington, 2009-2014
- Ranked 11-th among $350,000$ participants, National Entrance Exam of Azad University, Iran, 2004
- Ranked 30-th among $400,000$ participants, National University Entrance Exam, Iran, 2004

SELECTED PUBLICATIONS

Hooshmand, A., Horner-Devine, A.R. and Lamb, M.R (2015) Structure of turbulence and sediment stratification in wave-supported mud layers *(J. Geophys. Res. Oceans)* 120, 2430-2448, doi:10.1002/2014JC010231

- **Hooshmand, A.**, Horner-Devine A.R. and Ogston A.S. Sediment transport prediction due to wave-supported gravity currents in continental shelves. *(Under final revision)*
- **Hooshmand, A.**, Asgharzadeh, H., Afshin, H and Firoozabadi, B. Behavior of intermediate baffle in sedimentation basins. *International Mechanical Engineering Congress & Exposition (IMECE2008)*, Oct. 31- Nov. 6, Boston, Massachusetts, USA, 2008.
- Firoozabadi, B., Nourmohammadi, Z., **Hooshmand, A.** and Afshin, H. Effects of non-dimensional parameters on the instability of particle-laden density currents. *Proceedings of the International Conference on Fluvial Hydraulics*, Izmir, Turkey, Sep. 3-5, 2008.
- Firoozabadi, B., Jamshidnia, H.R. and **Hooshmand, A.**, H. ADV measurement of flow in sedimentation basins. *12th Asian Congress of Fluid Mechanics (12ACFM)*, Aug. 17-21, Daejeon, Korea, 2008.
- Asgharzadeh, H., **Hooshmand, A.**, Firoozabadi, B. and Afshin, H. Influence of baffle configuration on the flow field in final settling tanks. *16th Annual (International) Conference on Mechanical Engineering*, Shahid Bahonar University, Kerman, Iran, May 13-15, 2008.

CONFERENCE PRESENTATIONS

- **Hooshmand, A.** and Horner-Devine A.R. (2014) The effects of bed-forms and stratification on wave-supported gravity currents, Abstract # 224. Presented at Ocean Sciences, Honolulu, HI, 23-28 February.
- **Hooshmand, A.** and Horner-Devine A.R. (2012) Calculating turbulence with noise reduction methods using Vectrino II, Abstract # 207. Presented at Hydraulic Measurements and Experimental Methods, Snowbird, Utah12-15 August.
- **Hooshmand, A.**, Horner-Devine A.R. and Ogston, A.S. (2012) Experimental investigation of turbulence and suspended sediment in the wave bottom boundary layer, Abstract #11845. Presented at Ocean Sciences, Salt Lake City, UT, 20-24 February.

LEADERSHIP EXPERIENCE

- **Graduate Student Senator** representing Department of Civil and Environmental Engineering and attending University of Washington Senate meetings (Sep 2011 - Sep 2012)
- **Mentor for high school students** in Mathematics & Physics in preparation for Iranian University Entrance Exam (Sep 2005 - Sep 2006)

PROFESSIONAL MEMBERSHIPS

- American Society of Civil Engineers
- Coasts, Oceans, Ports & Rivers Institude
- American Geophysical Union

INTERESTS

- Playing Setar
- Soccer, Squash, rock climbing
- Backpacking and traveling
- Cooking
- Making beeswax candles