

# Navid Shervani-Tabar

Center for Informatics and Computational Science, University of Notre Dame

Email: nshervan@nd.edu, Website: <http://nsherv.weebly.com>.

## Education

- 2017 to present    Ph.D., Mechanical Engineering  
**University of Notre Dame**, College of Engineering, Notre Dame, IN, USA
- 2014 to 2017      M.Sc., Mechanical Engineering  
**University of Colorado Boulder**, College of Engineering & Applied Science,  
Boulder, CO, USA.
- 2009 to 2014      B.Sc., Mechanical Engineering  
**University of Tabriz**, Faculty of Mechanical Engineering, Tabriz, Iran.
- 2002 to 2009      Diploma, Mathematics and Physics  
**National Organization for Development of Exceptional Talents (NODET)**  
Middle and High schools, Tabriz, Iran

## Publications

### Thesis

- N. Shervani-Tabar, "**Stabilized Conservative Level Set Method with Adaptive Wavelet-Based Mesh Refinement**", *MS thesis, University of Colorado Boulder (2017)*.

### Journal Publications

- N. Shervani-Tabar, O. V. Vasilyev, "**Stabilized Conservative Level Set Method**", *Journal of Computational Physics*, 375 (2018): 1033-1044.
- M. T. Shervani-Tabar, N. Shervani-Tabar, "**Movement of Location of Tip Vortex Cavitation along Blade Edge due to Reduction of Flow Rate in an Axial Pump**", *International Journal of Mechanical and Aerospace Engineering*, 6(33), pp. 191-195, 2012.

### Conference Publications

#### Abstracts

- N. Shervani-Tabar, O. V. Vasilyev, "**Stabilized Conservative Level Set Method with Adaptive Wavelet-based Mesh Refinement**", *Bulletin of the American Physical Society*, 61(20), 2016.

#### Proceedings

- M. T. Shervani-Tabar, N. Shervani-Tabar, "**Movement of Location of Tip Vortex Cavitation along Blade Edge due to Reduction of Flow Rate in an Axial Pump**", *World Academy of Science, Engineering and Technology*, 61, pp. 1034, 2012.
- N. Shervani-Tabar, R. Sedaaghi, R. Mohajerin, M. T. Shervani-Tabar, R. I. Bourisli, "**Experimental and Computational Investigation on the Cavitation Phenomenon in a Centrifugal Pump**", *Proceedings of the Eighth International Symposium on Cavitation (CAV 2012)*, pp. 489, 2012.

## Honors and Awards

- **Outstanding Mechanical Engineering Research Potential Fellowship**, *University of Colorado Boulder*, 2016.
- **Department of Mechanical Engineering Travel Grant**, *University of Colorado Boulder*, 2016.

- **STEMinar Grant**, *University of Colorado Boulder*, 2016.
- **Dean's Office Matching Grant**, *University of Colorado Boulder*, 2016.
- **STEMinar Grant**, *University of Colorado Boulder*, 2015.
- **Top Researcher Award (Class of 2014)**, *University of Tabriz*, 2014.

## Research Work Experiences

- 2018            **Multiresolution Approximation of a Bayesian Inverse Problem using Second-Generation Wavelets**  
Prof. N. Zabaraz, Center for Informatics and Computational Science, University of Notre Dame
- 2016            **Stabilized Conservative Level Set Method with Adaptive Wavelet-based Mesh Refinement**  
Prof. O. V. Vasilyev, Multi-Scale Modeling and Simulation Lab., University of Colorado Boulder
- 2013            **Detecting of Vibration of Hydraulic Structures and Machineries due to the Cavitation Phenomenon,**  
Prof. M. T. Shervani-Tabar and Prof. M. M. Etefagh,  
Fluid Mechanics Research Lab., Vibration and Dynamics Lab., University of Tabriz.
- Design and Building of an Experimental Setup for studies on Cavitation Phenomenon in Viscous Fluids in Centrifugal Pumps,**  
Prof. M. T. Shervani-Tabar, Fluid Mechanics Research Lab., University of Tabriz.
- 2012            **Experimental studies on Cavitation Phenomenon in Centrifugal Pumps,**  
Prof. M. T. Shervani-Tabar, Fluid Mechanics Research Lab.
- Numerical studies on Cavitation flow in Centrifugal Pumps,**  
Prof. M. T. Shervani-Tabar, Center for CFD Studies on Heat Engines, Cavitation Flow and Petroleum Industries, University of Tabriz.
- Experimental studies on Cavitation Phenomenon in Axial Pumps,**  
Prof. M. T. Shervani-Tabar, Fluid Mechanics Research Lab., University of Tabriz.

## Teaching Work Experiences

- 2018            **Statistical Computing Methods**  
Teaching Assistant, designing and grading assignments, holding office hours and recitations  
Prof. N. Zabaraz, University of Notre Dame
- 2017            **Fluid Mechanics**  
Teaching Assistant, grading assignments and exams, holding office hours  
Prof. J. Knutsen, University of Colorado Boulder
- 2016            **Methods of Engineering Analysis I**  
Teaching Assistant, setting assignments, designing exams, holding recitations and office hours  
Prof. F. Vernerey, University of Colorado Boulder
- Heat Transfer**  
Grading assignments and exams  
Prof. R. Yang, University of Colorado Boulder
- Chemistry**  
Grading assignments and exams

2015	Prof. M. A. Borden, University of Colorado Boulder <b>Methods of Engineering Analysis I</b> Grading assignments and conducting exams Prof. O. V. Vasilyev, University of Colorado Boulder
2013	<b>Fluid Mechanics I,</b> Grading assignments and exams and Holding recitation session University of Tabriz.
2012	<b>Fluid Mechanics II,</b> Grading assignments and exams and Holding recitation session University of Tabriz.  <b>Hydraulics and Pneumatics,</b> Holding recitation session University of Tabriz.

### Selected Courses

- Statistical Computing Methods
- Probabilistic Graphical Models
- Bayesian Methods for Surrogate Modeling and Dimensionality Reduction
- Advanced Scientific Computing
- Stochastic Analysis
- Neural Networks
- Applied Probability
- Applied Bayesian Statistics
- Numerical PDE Techniques
- Advanced Computational Fluid Dynamics
- Methods of Engineering Analysis I & II
- Compressible Flow
- Multiresolution Algorithms
- Fundamentals of computational fluid dynamics

### Selected Academic Projects

- *Wavelet-based Tree-structured Compressive Sensing with Variational Bayesian Analysis*, Probabilistic Graphical Models, Prof. N. Zabarar, (Spring 2018).
- *A multi-resolution approximation of an inverse problem's parameters using Bayesian wavelet shrinkage*, Statistical Computing Method, Prof. N. Zabarar, (Fall 2017).
- *Dynamics in a Rotating Coordinate System*, Fluid mechanics, Prof. B. Argrow, (Fall 2016).
- *Lagrangian Drifter for Atmospheric Sensing in Supercells*, Fluid mechanics, Prof. B. Argrow, (Fall 2016).
- *Fluid Flow over Obstacle with Riemann Solvers*, Advanced computational fluid dynamics, Prof. O. V. Vasilyev, (Spring 2016).
- *Analyzing stability and errors of Crank–Nicolson method*, Fundamentals of Computational Fluid Dynamics, Prof. M. T. Shervani-Tabar, (Fall 2012).
- *An Analytical Survey on Evans Four-Bar linkage Mechanism*, Dynamic of Machines, Prof. M. M. Etefagh, (Spring 2013).

- *A Survey on Prandtl number dependence of laminar natural convection heat transfer in a horizontal cylindrical enclosure with an inner coaxial triangular cylinder*, Heat Transfer II, Prof. H. Aminfar, (Spring 2012).
- *A Survey on the single phase forced convection heat transfer characteristics of TiO<sub>2</sub> nanofluids in a double-tube counter flow heat exchanger*, Heat Transfer II, Prof. H. Aminfar, (Spring 2012)
- *Temperature Distribution on a Radial Fin*, Heat Transfer I, Prof. H. Aminfar (Fall 2011).
- *Designing of engine connecting rod*, Mechanical Engineering Design I, Prof. F. Vakili-Tahami, (Spring 2012).
- *Designing characteristics of valve spring*, Mechanical Engineering Design II, Prof. F. Vakili-Tahami, (Fall 2012)
- *Designing characteristics of a ventilation system for a sample house using Carrier HAP software*, Ventilation (HVAC) I, Prof. M. Jafari, (Fall 2012).

### Research Interests

- Wavelet Methods
- Uncertainty Quantification
- Sequential Monte Carlo Methods
- Inverse Problem
- Computational Fluid Dynamics
- Level Set
- Bubble Dynamics
- Multiphase Flows

### Technical Skills

Programming Languages	C++, Fortran, Python, MATLAB
Operating Systems	Linux, Mac, Windows
Productivity Softwares	Excel, Word, PowerPoint, Keynote, and Photoshop
Commercial Softwares	FLUENT, AnSys, SolidWorks, and Carrier HAP
Open Source Softwares	ParaView, and Emacs

### Language Skills

English	Native (Was born and has grown up in Australia)
Turkish (Azeri)	Native
Persian (Farsi)	Native
Arabic	Basic

### Experimental and Academic Certifications

2012	<b>FLUENT Software User</b> , Iran TVTO <b>Modern Industrial Pneumatics</b> , FESTO Didactics <b>Basic Programming of PLCs</b> , FESTO Didactics <b>Advanced Hydraulics</b> , FESTO Didactics <b>SolidWorks Software User</b> , Iran TVTO
2011	<b>E3 Electrical Welding</b> , Iran TVTO

## **Examinations**

TOEFL            TOEFL Score: 100  
                      Reading: 28  
                      Listening: 27  
                      Speaking: 22  
                      Writing: 23

GRE                Verbal Reasoning: 153  
                      Quantitative Reasoning: 167  
                      Analytical Writing: 3.5

## **Sports & Hobbies**

I am a certificated soccer referee by Iranian National Football Federation. I'm also interested in jogging and hiking. My hobbies include pencil drawing and blogging. I have my own weblog for about six years. I also enjoy studying history.