Rohit Tripathy

#5 225 South River Road
West Lafayette, IN, USA

+1-765-476-6988
rtripath@purdue.edu

Education

- **Purdue University** — West Lafayette, IN
  PhD., Mechanical Engineering; GPA - 3.93/4.0 — *January. 2016 - Dec 2019 (expected)*
  - Advisor: Prof. Ilias Bilionis
  - Relevant courses: Uncertainty Quantification, Computational Methods in Optimization, Stochastic Processes, Monte Carlo Methods, Bayesian Data Analysis.
- **Purdue University** — West Lafayette, IN
  MS., Mechanical Engineering; GPA - 3.61/4.0 — *August 2014-December 2015*
  - Relevant courses: Decision Theory and Bayesian Statistics, Finite Element Method, Computational Fluid Dynamics, Atomistic Simulations, Fluid Mechanics, Numerical Methods.
- **VIT University** — Vellore, India
  B. Tech., Mechanical Engineering; GPA - 9.04/10.0. — *July 2010-May 2014*

Work Experience

- *Givens Associate*, Argonne National Laboratory, Lemont, IL (June 2017 - August 2017).

Research Experience

- **Predictive Science Lab, Purdue University** — West Lafayette, IN
  Graduate Research Assistant — *August 2014 - Present*
  - Research focused on surrogate modeling for uncertainty quantification.
  - Developed a gradient-free, dimensionality reduction technique called active subspace Gaussian process regression (ASPGP).
  - Currently working on deep neural networks for uncertainty quantification.
- **Math. and Computer Science (MCS) division, Argonne National Lab** — Lemont, IL
  Givens associate (PhD intern) — *June 2017 - August 2017*
  - Explored the use of machine learning methods for wind speed forecasting. In particular, used deep learning techniques for sequence modeling such as LSTMs.

Publications

- Rohit Tripathy, Ilias Bilionis, and Marcial Gonzalez. *Gaussian processes with built-in dimensionality reduction: Applications to high-dimensional uncertainty propagation.* Journal of Computational Physics 321 (2016): 191-223.

Talks / Presentations

- **SIAM AN 2017** — Pittsburgh, PA
  High dimensional multifidelity uncertainty quantification with deep neural networks. — *July 2017*
- **SIAM DR 2017** — Pittsburgh, PA
  Discovering nonlinear active subspaces using deep neural networks. — *July 2017*
- **SIAM CSE 2017** — Atlanta, GA
  Learning multiscale stochastic FEM basis functions with deep neural networks. — *March 2017*

- **ASME Verification and Validation (V&V) Symposium** — Las Vegas, NV
  Probabilistic Active subspaces. — *May 2016*
- **SIAM Purdue CSESC 2016** — Purdue University
  A novel method for gradient-free dimensionality reduction. — *March 2016*

Selected Coursework Projects

- **Optimization over the Stiefel Manifold**
  Computational methods in optimization course, CS 520 — *Jan 2016 - May 2016*
  - Implemented, in `Python`, a modified form of gradient descent on manifold space, with update scheme based on the Cayley transform.
- **Finite element solver for a plane stress hypoelasticity problem**
  Finite Element Methods course, ME 681. — *Jan. 2015 - May 2015*
  - Implemented in `Python` from scratch a nonlinear finite element solver for 2D hypoelasticity problem for a square plate.
- **2-D Incompressible Navier Stokes solver**
  Computational Fluid Dynamics course, ME 614 — *Jan. 2015 - May 2015*
  - Implemented, in `Python`, from scratch, a fully conservative finite difference solver with a staggered grid formulation to solve the lid driven cavity problem.

Skills

Languages (In order of comfort): `Python`, `R`, `MATLAB`.

Deep Learning frameworks: Familiarity with `caffe`, `Theano` and `tensorflow`.

Other software: LaTeX, `git`.

Academic Interests

Uncertainty Quantification, Machine Learning, Deep learning and Artificial Intelligence, Data Analysis, Finite Element methods. Computational physics.

Professional Memberships

- Academic and Professional Development (APD) Committee of Purdue Graduate Student Government (PGSG) [*September 2014 - April 2015*].
- Society of Industrial and Applied Mathematics (SIAM) student member [*August 2015- present*].
- SIAM Purdue chapter Treasurer [*August 2016 - present*].
- American Society of Mechanical Engineers (ASME) student member [*January 2016-present*].

Mentorship Experience

Mentored NCN-SURF student interns in the Predictive Science Lab in 2015 and 2016.

Links

- **LinkedIn**: http://tinyurl.com/p4myxe8.
- **Bitbucket**: https://bitbucket.org/rohitkt10/.
- **Active subspace project github**: https://github.com/PredictiveScienceLab/py-aspgp.