Rohit Kaushal Tripathy

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WORK EXPERIENCE

- **The Jackson Laboratory for Genomic Medicine** — Farmington, CT
  Associate Computational Scientist — *July 2022 - present*
    - Integrative cross-species data analysis.

- **Koo Lab, Cold Spring Harbor Laboratory** — Cold Spring Harbor, NY
  Postdoctoral Researcher — *June 2020 - July 2022*
    - Deep learning for genomics.

- **QR Spread (EMM), JPMorgan Chase & Co.** — New York City, NY
  Quantitative Research-Machine Learning Summer Associate — *May 2019 - August 2019*
    - Machine learning based alpha signal generation model for investment grade US corporate bonds.

- **QR Commodities, JPMorgan Chase & Co.** — New York City, NY
  Quantitative Research-Machine Learning Summer Associate — *May 2018 - August 2018*
    - Deep neural networks for pricing spread options in the high-correlation limit.

- **Math and CS division, Argonne National Laboratory** — Lemont, IL
  Givens Associate (PhD intern) — *May 2017 - August 2017*
    - Recurrent deep neural network architectures (RNNs/LSTMs) for wind-speed forecasting.

EDUCATION

- **Purdue University** — West Lafayette, IN
  PhD., Mechanical Engineering; GPA - 3.86/4.0 — *January. 2016 - May 2020*
- **Purdue University** — West Lafayette, IN
  MS., Mechanical Engineering; GPA - 3.61/4.0 — *August 2014-December 2015*
- **VIT University** — Vellore, India
  B. Tech., Mechanical Engineering; GPA - 9.04/10.0. — *July 2010-May 2014*

REFEREED PUBLICATIONS / PREPRINTS

- Ethan Labelson, **Rohit Tripathy**, Peter Koo. *Towards trustworthy explanations with gradient-based attribution methods.* NeurIPS AI4Science Workshop (2021).

- Rohan Ghotra, Nicholas K. Lee, **Rohit Tripathy**, Peter K. Koo. *Designing Interpretable Convolution-Based Hybrid Networks for Genomics.* ICML Workshop on Computational Biology (2021).

- Risa Kawaguchi, Ziqi Tang, Stephen Fischer, **Rohit Tripathy**, Peter Koo, Jesse Gillis. *Exploiting marker genes for robust classification and characterization of single-cell chromatin accessibility.* BioRxiv (2021).

- Sharmila Karumuri, **Rohit Tripathy**, Ilias Bilionis, Jitesh Panchal, *Simulator-free Solution of High-Dimensional Stochastic Elliptic Partial Differential Equations using Deep Neural Networks.*, Journal of Computational Physics 404 (2020): 109120.

- **Rohit Tripathy**, Ilias Bilionis. *Deep Active Subspaces: A Scalable Method for High-Dimensional Uncertainty Propagation.* Proceedings of the ASME 2019 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference. Volume 1: 39th Computers and Information in Engineering Conference. Anaheim, California, USA.

- **Rohit Tripathy**, Ilias Bilionis. *Deep UQ: Learning deep neural network surrogate models for high dimensional uncertainty quantification.* Journal of Computational Physics 375 (2018): 565-588.

- **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.

INVITED SEMINAR TALKS

- **The Jackson Laboratory**   Farmington, CT
  Towards trustworthy explanations of deep learning models in genomics.   *May 2022*
- **Cold Spring Harbor Laboratory**   Cold Spring Harbor, NY
  Machine learning strategies for high-dimensional uncertainty quantification.   *January 2020*

SELECTED CONFERENCE TALKS / PRESENTATIONS

- **ASME IDETC-CIE 2019**   Anaheim, CA
  Deep active subspaces for high-dimensional uncertainty quantification.   *March 2019*
- **SIAM CSE 2019**   Spokane, WA
  DNN response surfaces for multifidelity information fusion.   *March 2019*
- **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*

SKILLS

- **Languages:** `Python`, `C++`, `R`, `MATLAB`.

- **Deep Learning frameworks:** `PyTorch`, `tensorflow`, `keras`.

- **Probabilistic programming:** `Edward`, `pyMC`, `pyMC3`, `Pyro`, `tensorflow-probability`.

- **Software development** - Build systems (`cmake`), Unit testing (`nose`, `pytest`), Big data formats (`hdf5`, `tfrecords`).

- **SQL Database management systems** - `MySQL`, `PostgresQL`.

- **Machine Learning/Data Analysis techniques:** Gaussian processes, Deep learning, Bayesian methods, Latent Variable models, generative models, Time series analysis, Sampling techniques (Markov Chain Monte Carlo, Variational Inference etc).

- **General:** Quantitative Research, Mathematical/statistical/probabilistic modeling, technical writing and communication.

TEACHING EXPERIENCE

- **ME 597 - Uncertainty Quantification**   Purdue University
  Teaching Assistant   *January 2018 - May 2018*
  - Helped instructor (Prof. Ilias Bilionis) prepare lecture material and homework problem sets.
  - Conducted in-class hands-on tutorial sessions and weekly office hours.
  - Graded all assignments and projects.

- **ME 597 - Uncertainty Quantification**   Purdue University
  Teaching Assistant   *January 2020 - May 2020*
  - Helped instructor prepare lecture material, homework problem sets and solutions.
  - Conducted in-class hands-on tutorial sessions and weekly office hours.

– Graded all assignments and projects.

MENTORING EXPERIENCE

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

- Mentored junior students at the Predictive Science Lab (2018 - Present).

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 - May 2017*].

SERVICE

- Served as peer reviewer for articles submitted to *SIAM/ASA Journal of Uncertainty Quantification* (SIAM JUQ) *International Journal of Uncertainty Quantification* (IJUQ) and *Journal of Computational Physics* (JCP).

- Organizer of a mini-symposium on *Physics-constrained AI for dynamical systems* at the SIAM Mathematics & Data Science (MDS) 2020 conference.