ARAVINTH KRISHNAN RAVI

arav0006@ksu.edu | https://hippyhippohops.github.io/

EDUCATION

Kansas State University **Aug 2022 - Current**

PhD in Mathematics (Advisor: Dinh-Liem Nguyen)

Nanyang Technology University (NTU), Singapore **Aug-2018 - June 2022**

Bachelor of Science (Honours with Distinction) in Mathematical Sciences (Specialisation: Pure Mathematics)

WORK EXPERIENCE

Graduate Research Assistant, Kansas State University, USA **Jan 2025 - Current**

- Worked with **medium-to-large experimental datasets** (≅200,000 samples × 30 features, ≅500 MB), requiring effective feature processing and efficient custom training pipelines
- Applied Diffusion Models and Variational Autoencoders to recover atomic positions from its final trajectories using experimental data with **99.3% accuracy**

Researcher, Nanyang Technological University, Singapore **May 2022 – July 2022**

- Implemented a high-performance OOP Python algorithm for **large-scale** eigenvalue computations to test a conjecture in low-dimensional topology

Machine Learning Intern,

Institute for Infocomm Research, (A*STAR), Singapore **July 2021 – Dec 2021**

- Designed and deployed predictive regression models to forecast asset lifetimes, reducing maintenance downtime and **decreasing costs by 15%**

Skills

- Programming Languages: Matlab, Python (Tensorflow, PyTorch NumPy, scikit-learn, Pandas, SciPy)
- Languages: Proficient in English (written and spoken)

PUBLICATIONS

In Preparation:

- **Aravinth K. Ravi**, N. Nguyen, D.L. Nguyen - Fourier Physics-Informed Neural Networks to solve the 3 dimensional Inverse Source Problem, 2025
  Implementation highlight: Designed a separable inverse SFT for 3-D imaging (TensorFlow tf.einsum + cached 1-D bases); removed device syncs & large temporaries, enabling 64^3 grids; **≈21× faster** with **≈99.8% lower peak temporary memory** vs baseline
- A. Ghanaatian, **Aravinth K. Ravi**, D. Caragea, N. Albin, and D. Rolles - Neural Network Based Molecular Structure Retrieval from Coulomb Explosion Imaging Data, 2025
- **Aravinth K. Ravi**, D.L. Nguyen - Model-based Neural Network to solve the 2 dimensional Inverse Scattering and Inverse Source Problems, 2025

Awards

NTU President Research Scholar **2020, 2021**