Kary Ishwaran

kary.ishwaran@gmail.com
786-353-8500
catzilla.me
tinyCatzilla
kary-ishwaran

Education

- **University of Toronto** *2021 - 2025*
  Mathematics & Its Applications Specialist (Probability/Statistics); GPA: 3.49 *Toronto, Ontario*
  Selected Courses: Methods of Multivariate Data, Applied Bayesian Analysis, Methods of Data Analysis, Nonlinear Optimization.

Skills

- **Programming Languages**: Python, R, Rust, TypeScript, Java, C
- **Tools/Environment**: PyTorch, SLURM, Jupyter, MATLAB

Experience

- **Cleveland Clinic - Heart, Vascular, and Thoracic Institute** *2023*
  Research Student *Cleveland, OH*
  - **Machine Learning**: Implemented and developed CNNs, RNNs, LSTMs and more using PyTorch and its extensions.
  - **Data Imputation**: Utilized mForest imputation, LOCF, and padding to account for missing data.
  - **Statistical Modeling**: Applied random forest algorithms to high-dimensional time series data for regression and classification.
  - **Medical Imagery**: Developed scripts for extracting and parsing DICOM metadata and imagery, including decompressing chroma subsampled data.
  - **Production Environment**: Gained hands-on experience using SLURM and distributed computing systems in a team.
- **Canadian Open Math Competition** *2022*
  Level 3 Grader *Toronto, Ontario*
  - **Olympiad Selection**: Graders play a critical role in selecting the 50 participants for the Canadian Math Olympiad, a prestigious event determining Canada's representatives at the International Math Olympiad.

Projects

- **NICM Prediction**: Multilabel classification networks to screen for cardiomyopathies. *2023*
  Python, PyTorch, fastai, R *Cleveland Clinic*
  - **Prediction**: Implemented models from the tsai library, built on top of PyTorch and fastai, to predict the presence of 7 Non-ischemic Cardiomyopathies (NICM).
  - **AMIA Abstract**: Wrote and submitted an abstract to the American Medical Informatics Associations (AMIA), to be presented at their 2023 Annual Symposium.
- **Echocardiogram View Classifier**: A CNN image classifier augmented with a Temporal Shift Module (TSM). *2023*
  Python, PyTorch, R *Cleveland Clinic*
  - **Image Extraction**: Reconstructed the frames of echocardiograms from medical DICOM files, and screened the resultant videos for color and movement using OpenCV color masks and SSIM.
- **light:write**: A minimalist text editor to produce high quality, stylized text with ease. *2023*
  Electron, TypeScript, React
  - **Real-time Serialization**: Renders Markdown, code blocks, HTML, and LaTeX in real-time.
  - **Lightweight**: Optimized to use only ~25MB memory total.
- **cat.leship**: An online multiplayer battleship web game. *2023*
  TypeScript, WebSockets
  - **Fullstack Development**: Frontend UI and client-handling, backend server management and game logic, all tied together with Websockets.
- **sudo-ku**: Implementations of various sudoku algorithms. *2023*
  Rust, R
- **reminders**: A time-based reminder extension for Firefox. *2023*
  Javascript
- **deeplearn**: A modular toolkit for implementing various deep learning architectures. *2023*
  Python, PyTorch, fastai, R

Papers

- **Pre-test Prediction of Non-ischemic Cardiomyopathies using Time-Series EHR** *2023*
  Kary Ishwaran, Richard Grimm, Deborah Kwon, David Chen *Preprint*

Honors and Awards

- **In-Course Scholarship (2023)**: One of 140 annual recipients of a $500 scholarship for "excelling in their university academic work"
- **Dean's List Scholar (2022)**: Awarded annually by the University of Toronto for high GPA.
- **National Merit Scholarship (2020)**: Out of 1.5 million PSAT test takers, I was part of 7,250 who were awarded a $2,500 scholarship.