Kary Ishwaran

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EDUCATION

- **University of Toronto** — *2021 - 2025*
  HBSc Applied Mathematics (Probability/Statistics) — *Toronto, ON*
  Selected Courses: Statistical Methods for Machine Learning I & II, Real Analysis, Numerical Methods for Optimization.

SKILLS

- **Programming Languages**: Python, R, C++, Rust, TypeScript, Java
- **Tools/Environments**: PyTorch, SLURM, Numpy, Scipy, fast.ai, Jupyter, MATLAB

EXPERIENCE

- **Cleveland Clinic - Heart, Vascular, and Thoracic Institute** — *2023*
  Data Scientist — *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*
  Grader — *Toronto, ON*
  - **Olympiad Selection**: Results of the COMC select the ≈ 50 participants for the Canadian Math Olympiad – the final selection before the International Math Olympiad.

PROJECTS

- **[NICM Prediction](#)**: Multilabel classification networks to screen for heart disorders. — *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 Conference**: Wrote a full paper which was accepted for publication and presentation at the AMIA 2024 Informatics Summit.

- **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.

- **[sudo-ku](#)**: Implementations of various sudoku algorithms. — *2023*
  Rust, R
  - **Advanced Algorithms**: Full implementations of iterative deepening DFS, constraint programming, stochastic searches, and more.
  - **Speedy**: Solves even difficult puzzles in an average of 2ms.

PAPERS

- **[Pre-test Prediction of Non-ischemic Cardiomyopathies using Time-Series EHR](#)**
  Ishwaran, Kary et al. AMIA Joint Summits on Translational Science vol. 2024 239-248. 31 May. 2024

HONORS AND AWARDS

- **AMIA Lead Fund (2024)**: One of 5 recipients of a $500 scholarship to attend the 2024 AMIA Informatics Summit.
- **ASSU Travel Grant (2024)**: Received $200 from the UofT Arts and Science Student Union to attend the AMIA Summit.
- **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)**: One of 7,250 out of 1.5 million PSAT test takers awarded a $2,500 scholarship.