Zhicheng Guo

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EDUCATION

Duke University — Durham, NC
Ph.D. in Electrical and Computer Engineering — Jan 2022 – (Expected) May 2026
M.S. in Computer Science (Early Terminated) — Aug 2020 – Dec 2021

Rensselaer Polytechnic Institute — Troy, NY
B.Sc. in Computer Science — July 2016 – May 2020

PROFESSIONAL EXPERIENCE

Texas Instrument – **Kilby Labs** — May 2025 – Aug 2025
Machine Learning Researcher

- Ongoing

Duke University Health System — May 2021 – Aug 2021
Quantitative Research Intern

- Investigated correlations between cellular populations/markers in CSF and PBMC with cognitive scores in HIV-associated neurocognitive disorder patients under different drug use conditions.
- Analyzed patient PBMC and CSF flow cytometry data.
- Developed machine learning models with flow cytometry data to predict drug use and impairment, enabling clinical researchers to assess drug effects on patients.

PUBLICATIONS

(* indicates co-first /co-senior authors, equal contribution) Google Scholar

[1] Varun Babbar***, Zhicheng Guo***, Cynthia Rudin. "What is different between these datasets?"
*Journal of Machine Learning Research (**JMLR**)*, 2025 (Accepted).

[2] Jon Donnelly, **Zhicheng Guo**, Alina Jade Barnett, Hayden McTavish, Chaofan Chen, Cynthia Rudin. **"**Rashomon Sets for Prototypical-Part Networks: Editing Interpretable Models in Real-Time.**"**
*Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition **(CVPR)***, 2025.

[3] Alina Jade Barnett*****, **Zhicheng Guo***, Jin Jing*, Wendong Ge, Brandon Westover, Cynthia Rudin. "Improving Clinician Performance in Classification of EEG Patterns on the Ictal-Interictal-Injury Continuum using Interpretable Machine Learning."
*New England Journal of Medicine AI (**NEJM AI**),* 2024.

[4] **Zhicheng Guo**, Cheng Ding, Duc H. Do, Amit Shah, Randall J Lee, Xiao Hu, Cynthia Rudin. "SiamAF: Learning Shared Information from ECG and PPG Signals for Robust Atrial Fibrillation Detection."
*Harvard Data Science Review (**HDSR**)*, 2024.

[5] Cheng Ding, **Zhicheng Guo**, Cynthia Rudin, Ran Xiao, Amit Shah, Duc H Do, Randall J Lee, Gari Clifford, Fadi B Nahab, Xiao Hu. "Learning From Alarms: A Robust Learning Approach for Accurate Photoplethysmography-Based Atrial Fibrillation Detection Using Eight Million Samples Labeled with Imprecise Arrhythmia Alarms."
*IEEE Journal of Biomedical and Health Informatics (**IEEE JBHI**),* 2024.

[6] Sully F Chen, **Zhicheng Guo**, Cheng Ding, Xiao Hu, Cynthia Rudin. "Learned Kernels for Sparse, Interpretable, and Efficient Medical Time Series Processing."
***Nature Machine Intelligence**,* 2024.

[7] Cheng Ding, **Zhicheng Guo**, Zhaoliang Chen, Randall J Lee, Cynthia Rudin, Xiao Hu. "SiamQuality: a ConvNet-based Foundation Model for Photoplethysmography Signals." ***Physiological Measurement***, 2024.

[8] Manickam Ashokkumar, Wenwen Mei, Jackson J Peterson, Yuriko Harigaya, David M Murdoch, David M Margolis, Caleb Kornfein, Alex Oesterling, **Zhicheng Guo**, Cynthia D Rudin, Yuchao Jiang, Edward P Browne. "Integrated Single-cell Multiomic Analysis of HIV Latency Reversal Reveals Novel Regulators of Viral Reactivation." ***Genomics, Proteomics & Bioinformatics***, 2024.

[9] **Zhicheng Guo**, Cheng Ding, Xiao Hu, Cynthia Rudin."A Supervised Machine Learning Semantic Segmentation Approach for Detecting Artifacts in Plethysmography Signals from wearables." ***Physiological Measurement***, 2021.

ONGOING PROJECTS

[1] Cosine Similarity is Almost All You Need (for Prototypical-Part Models) (submitted)

OP-EDS

[1] Cynthia Rudin, **Zhicheng Guo**, Cheng Ding, and Xiao Hu. "How good are AI health technologies? We have no idea." *STAT News*, Oct. 11, 2023.

TEACHING

Duke University

TA, Graduate Theory and Algorithms for Machine Learning 671D — Fall 2023
TA, Graduate Theory and Algorithms for Machine Learning 671D — Fall 2022
TA, Graduate Theory and Algorithms for Machine Learning 671D — Fall 2021

Rensselaer Polytechnic Institute

SAPRIS Program Academic Mentor — Summer 2017

SKILLS

Python, C/C++, Java, HTML, CSS
PyTorch, Hugging Face, TensorFlow, NumPy, Matplotlib, Pandas, Slurm, SQLite, Plotly Weights and Bias, MongoDB, Microsoft Word, Excel, PowerPoint, Visual Studio Code, OpenAI, Google Cloud