Zhicheng Guo

zhicheng.guo@duke.edu | 347.720.8974

EDUCATION

Duke University — Durham, NC
Ph.D. in Electrical and Computer Engineering — Jan 2022 - Present
M.S. in Computer Science (Transferred to Ph.D.) — Aug 2020 – Dec 2021

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

PROFESSIONAL EXPERIENCE

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

- Investigated correlations between cellular populations/markers in CSF and PBMC with cognitive scores in HAND 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] 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.

[2] 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.

[3] 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.

[4] 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.

[5] 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.

[6] **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.

IN SUBMISSION & ONGOING

[7] Varun Babbar*, **Zhicheng Guo***, Cynthia Rudin. "What is Different Between These Datasets?"
Submitted to *Journal of Machine Learning Research (**JMLR**)*, 2024.

[8] **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."
Submitted to *Harvard Data Science Review (**HDSR**)*, 2023. (Second Revision)

[9] It's LIT! LLMs with Interpretable Tool Calling. (Ongoing)

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