Guoning Yu

Data Scientist | Machine Learning Engineer | Seeking full-time Aug 2024
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Education

Ph. D. in Mathematics *Georgia State University*, 2019 – present
with Second Century Initiative Doctoral Fellowship for academic excellence

B. S. in Applied Mathematics *Lanzhou University*, 2015 – 2019

Representative Research Projects

Alzheimer Disease Prognosis with ADNI Clinical Data 2023/05 – present

- Processed clinical data, conducted explanatory data analysis, fit and evaluated novel PDE model parameters with multi-variable logistic regression; Applied tuned XGBoost framework to draw connections between molecular mechanisms of neurotoxicity, biomarkers, and the diagnosis.
- Predicted future prognosis rate of patients with AUC ROC score of 85% which outperforms previous models.

Hypergraphon Estimation and Validation 2022/12 – 2023/12

- Developed a community detection algorithm under the assumption of stochastic block model in large network tensors generated by hypergraphons; utilizing Python with SkLearn and NetworkX, generalized a K-fold cross validation method to large network dataset.
- Proved hyperparameter optimization on single network data converging to 0 in theory and real-world dataset.

Neural Mechanisms of Motor Learning from Errors 2022/12 – 2023/09

- Based on nonparametric Bayesian models, statistically identified the principles underlying the "Meta-Learning" or "Learning-How-to-Learn" process in human motor adaption.
- Conducted behavioral and neuronal time series data analysis, built predictive models with Markov chain Monte Carlo (MCMC) sampling methods.

Working Experiences

LLM (Large Language Model) app development *Freelance*, 2022 – present

- Using OpenAI API and fine-tuned Meta LLaMA2 models, combined with open-source large model application repositories such as AutoGPT, developed an intelligent chatbot to assist in college application process including English essay revisions, mock interviews, and standardized exam tutoring.

Course Instructor *Georgia State University*, 2020 – 2022

- Taught undergraduate mathematics courses, such as Quantitative Reasoning and College Algebra.

Research Papers

In **Statistics and Machine Learning**:

- *A method on m-uniform hypergraphon estimation and validation*, 2023+, in preparation

In **Computational Neuroscience**:

- *Sensory feedback and neuronal interactions in locomotor gait and balance control*, 2023+, under review

In **Graph Theory**:

- *The degree-f fractional density algorithm in graph edge coloring*, 2023+, under review
- *A decomposition method on solving the linear arboricity conjecture*, 2022, Journal of Graph Theory
- *Linear arboricity of degenerate graphs*, 2021, Journal of Graph Theory

Skills

- Programming Languages: C++ | Python | MATLAB | SQL
- ML/Data Visualization Libraries: PyTorch | TensorFlow | Keras | Scikit-Learn | NetworkX | Seaborn
- Tools: Git | Bash | Docker | AWS | ChatGPT | Tableau