Yu Li

Phone: +86 15271144175/Email: 15271144175@163.com

EDUCATION

Wuhan University, Hongyi Honor College **Wuhan, China**
B.Eng. in Microelectronics Science and Technology *09/2021-06/2025*
GPA: 3.88/4.0
Honors: First-Class Scholarship (2022); Scholarhsip for Academic Excellence (2023)

RESEARCH EXPERIENCE

Electrocardiogram (ECG) Images Classification based on Deep Learning **Wuhan, China**
Research Assistant, Research Advisor: Dr. Wei Liu *10/2022-Present*

- Collected dual-lead ECG signals from the MIT-BIH database and designed a lightweight model to address the real-time requirements of ECG-based preliminary diagnosis;
- Built the XGBoost-based diagnostic model after comparing the performance of AdaBoost, CatBoost, XGBoost, and random forests
- Designed a voting system consisting of four Xgboost models, achieving an accuracy of 97.4% within a short time and with limited resources as well as nearly perfect identification of normal ECG signals
- Developed a deep learning model comprising a combination of CNN and RNN, in which the RNN's hidden states incorporated the self-attention mechanism, resulting in an accuracy of 99.2%

PROJECTS

FPGA-based image acquisition and hardware acceleration *03/2023-Present*
National College Student Integrated Circuit Innovation Competition

- Label the images in the provided dataset of traffic lights, trained the YOLO5 model on the dataset, and adjusted the parameters, achieving an accuracy of more than 95%
- Develop a PCIe hardware driver that allowed the transmission of HDMI data from the FPGA to the host computer
- Employ FPGA's hardware computing unit to accelerate image recognition speed and stored the processed data in DDR4 memory, and continuously read the processed data from DDR4 memory, thus outputting the results of vehicle recognition in real-time

Insurance Fraud Study with Decision Tree Algorithm *07/2022-08/2022*

- Applied feature engineering to reduce the dimensionality of the data set and performed feature selection.
- Built ridge regression models and lasso regression models and conducted the comparative analysis.
- Created decision-tree models such as the XGBoost and CatBoost models, and conducted the comparative analysis.
- Applied grid search to find the optimal hyperparameters in the CatBoost model, improving its validation rate to up to 95%.

Effect of Mask Material and Process Parameters on Performance *08/2022*
The 3rd Huashu Cup Mathematical Modeling Competition for College Students

- Explored the relationships between structural variables through correlation analysis and interactive visualization; derived the pattern with control variable methodology.
- Constructed the relationship between process parameters and structural variables by using the decision tree models GBDT, XGBoost, LightGBM, and linear regression models Ridge and Lasso.
- Applied the grid search strategy to select the decision tree and the optimal hyperparameters of linear regression models.
- Calculated the arithmetic average of two models to reduce the impact of notice and optimize the prediction results.
- Constructed the relationship between structural variables and product performances with decision tree models and BP neural networks
- Analyzed the correlations between structural variables and product performances
- Applied grid search to find the best combination of process parameters

Monte Carlo and Simulated Annealing Algorithm-Based Modeling of Parcel Sorting Optimization Problem *05/2022*
The 14th Huazhong Cup Mathematical Modeling Competition for College Students

- Built a greedy algorithm model to find an optimal solution for order acceptance and scheduling with batch delivery
- Built a Monte Carlo/simulated annealing algorithm model and obtained the optimal order of delivery by adjusting parameters of annealing temperature and maximum number of cycles

PATENT

An Air Conditioning Performance Continuous Monitoring System and Method *2019*

AWARDS

Excellent Prize, the 3rd Huashu Cup Mathematical Modelling Contest *08/2022*
The 3rd Prize, the 14th Huazhong Cup Mathematical Modeling Competition for College Students *05/2022*
"Growing Star" in Programming Practice Improvement Training, Hongyi Honor College, Wuhan University *10/2021*

SKILLS

Programming Language: Python, MATLAB, C++, C, Verilog