LITAO QIAO

1103 Sea Cliff Way, Oceanside, CA, 92056 ● (858) 666-7782 ● checkpppp@gmail.com

EDUCATION

PhD in Computer Engineering **June 2020 – Present**
University of California San Diego *La Jolla, CA*
- Advisor: Bill Lin

MS in Computer Science **Jan 2019 – June 2020**
University of California San Diego *La Jolla, CA*
- Thesis: Learning Accurate and Interpretable Decision Rule Sets from Neural Networks

BS in Computer Engineering **Sep 2015 – Dec 2018**
University of California San Diego *La Jolla, CA*
- Overall GPA: 3.815 / Major GPA: 3.937

SKILLS

Machine Learning: Python, PyTorch, Numpy, Pandas, Scikit-learn, Spark.
Full Stack Web Development: JavaScript, HTML/CSS, Node.js, React.js.
Software Development: Java, C, C++, Android.
Technical Skills: AWS, Vim, Git, Unix Command, Microsoft Office, Photoshop.

EXPERIENCE

Graduate Student Researcher **Apr 2019 – Present**
Electrical and Computer Engineering Department, UCSD *La Jolla, CA*
- Conduct independent research study on the topic of explainable machine learning and deep learning. Examined a wide range of state-of-the-art explainable machine learning models, exploring their advantages and disadvantages by reading public source code and publications.
- Improved the performance of the traditional Logic Minimization algorithm by a maximum of 10% as a supervised rule learning algorithm on the tabular datasets by proposing a rigorous statistical framework as a preprocessing mechanism. Work submitted to ICML 2022.
- Designed an interpretable machine learning model by customizing a three-layer perceptron where the explanation of the prediction can be readily extracted from the model. Experiments show that our methods beat other state-of-the-art interpretable machine learning methods by 3% on average. Work submitted to IJCAI 2022.
- Proposed a novel multi-layer perceptron structure that can be directly mapped to a set of decision rules. A set of accurate and interpretable decision rules can be obtained by using traditional neural network training methods (SGD), which supersedes all other state-of-the-art rule learners in terms of accuracy-complexity trade-off. Work published at AAAI 2021.

Data Analyst **Sep 2019 – Sep 2020**
David Kleinfeld Laboratory, UCSD *La Jolla, CA*
- Worked closely with many professors on building an automatic and interactive online mouse brain atlas alignment system using an interpretable machine learning method.
- Implemented new functionalities in an open-source web-based volume viewer Neuroglancer to facilitate the process of annotation on brain images, which saved our neuroscientists more than 20 hours per week on average.
- Designed new Python scripts to facilitate the pipelines used internally in the lab.

IT Student Worker **June 2019 – Mar 2020**
Electrical and Computer Engineering Department, UCSD *La Jolla, CA*
- Took the lead role in developing an affordable and user-friendly student response system, which constructs a stable Wi-Fi connection between the instructor and students in the classroom by turning a Raspberry Pi into a local web server.
- Designed the frontend website as a single page web app using React.js and connected it with Apache server and SQL database deployed on the Raspberry Pi.

Software Engineering Intern **Aug 2017 – Sep 2017**
Inspur International *Jinan, China*
- Self-taught React.js and Node.js and delivered several web pages for a cross-platform mobile application used internally by the entire company.

Tutor/Teaching Assistant **Mar 2017 – Present**
Computer Science and Engineering Department, UCSD *La Jolla, CA*
- Perform individual and group tutoring by holding office hours for 10 hours per week and promptly answering student questions submitted through the online discussion forum.
- Courses: ECE 15, CSE 30, CSE 120, CSE 140L and CSE 255.

PUBLICATIONS

- **Litao Qiao**, Weijia Wang, Bill Lin. "Learning Accurate and Interpretable Decision Rule Sets from Neural Networks." In *AAAI Conference on Artificial Intelligence*, 2021.