

Jing (Felicia) Ma

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EDUCATION

Boston University

Boston, MA

Ph.D. in Physics; Master of Arts in Physics

Sep. 2015 – May. 2022

- The 2019 – 2020 Outstanding Teaching Fellow in the Department of Physics (recognized by the Graduate School of Arts & Sciences, Boston University)

Peking University

Beijing, China

Bachelor of Science in Physics; Bachelor of Economics

Sep. 2011 – Jul. 2015

WORK EXPERIENCE

TuSimple | C++14, Python3, PostgreSQL, ROS

San Diego, CA

Software Engineer, Offboard Algorithm

Jun. 2022 – present

- Actively discussed with client teams, and delivered timely and reliable updates to the simulation platform to support their needs.
- Maintained databases of simulation scenarios, and extended their structures to allow for more flexibility in testing cases design.
- Independently designed and developed the pipeline to regenerate datasets synchronously and reproducibly, through **ROS** requests and responses; deployed to production, the new pipeline has proven to run comparably to or even faster than the asynchronous version, on average, and also fixed the frame loss issue.

Software Engineer Intern, Simulation Platform

May. 2021 – Aug. 2021

- Maintained the backend of the simulation platform, and added new functionalities to support internal and external needs.
- Refactored the metrics system for the simulation platform, decoupled the evaluation process from running, and enabled the possibility to design future-dependent as well as history-dependent evaluators.

PROJECTS

Critical Phenomena in Epidemic Models | C++, Python3

Sep. 2019 – May. 2022

- Mapped the SIR (Susceptible-Infected-Recovered) epidemic model as a percolation process embedded in networks.
- Studied critical phenomena and power-law behaviors of the SIR model, especially for multi-community networks, in the framework of generating functions.
- Implemented **Monte Carlo** simulations for large-size systems, and studied its difference from the theory due to finite size effects.

Neuronal Spike Data Analysis | Python3, PyTorch, Scikit-learn

Sep. 2018 – Aug. 2019

- Cleaned and standardized large-scale neuronal spike data from rats, and selected features using various dimension reduction methods.
- Implemented **LSTM** models and trained on historical data, to predict future motions of the same rats, and achieved 70 – 80% explained variance.
- Proposed similarity metrics to match features, and to transfer learning between rats.

Sharing Bike Usage Prediction | R

Fall 2017

- Cleaned and normalized weather data, and removed auto-correlation using the generalized least squares (**GLS**) technique.
- Implemented and compared different linear models based on adjusted R-squared, AIC, AICc, and BIC scores.
- Predicted the sharing bike usage for the following year, with correlation higher than 90%.

SKILLS

Languages: C++ (fluent), Python3 (fluent), SQL, Fortran, R, MATLAB, Java, Javascript, Go

Tools & Skills: Linux, Git, Vim, machine learning libraries, AWS

Soft Skill(s): Modeling, Critical Thinking, Teamwork and Cross-Team Collaboration