LUOHAO XU

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EDUCATION

Imperial College London Oct 2022 - Oct 2023
MSc Environmental Data Science and Machine Learning
Key Courses: Big Data Analytics, Advanced Programming, Deep Learning, Applied Data Science, Machine Learning, Computational Mathematics

University of Glasgow Sep 2018 - Jun 2022
BEng Electronic and Electrical Engineering with Information Engineering
GPA: 3.77/4.0
Degree Class: with Honours of the First Class (1:1)

WORK EXPERIENCE

Chengdu Dianzhen Technology Co.Ltd. **Software Developer Intern** Jul - Sep 2022
Development of Deep Learning Based Signal Modulation Mode Recognition Model Chengdu, China

- Sampled and generated dataset from 24 modulation modes, 26 SNR levels, and IQ dual channels
- Trained and tuned a ResNet model using **TensorFlow** framework and fine-tuned it with resampled, amplitude stretched and preprocessed real waveform using **SciPy**
- Developed GUI using **Tkinter** library in Python to predict modulation mode by inputting waveform files
- Model achieved 85% accuracy on simulated signal dataset (SNR > 0dB), and **91%** on real signals after fine-tuning, with over 50% of modulation modes recognized at 98% of accuracy

RELEVANT PROJECTS

Personal Website Development June - Aug 2023

- Built a static web page containing self-introduction, portfolio, and contact module
- Designed functions of interactive navbar, project cards, dark/light mode switcher by using **React**
- Deployed the website with Amplify server of Amazon Web Services with CI/CO workflow

Spatio-Temporal Crime Hotspot Prediction and Simulation of New York City Jul - Sep 2023

- Cleaned and analyzed 10 years of public NYC crime arrest records using Pandas, and performed EDA, data visualization to find correlations and trends
- Trained ConvLSTM, Random Forest and SARIMA models to predict location and probabilities of different kinds of crime with temporal, spatial, meteorological, and seasonal dimensions by using **PyTorch** and **Python**
- Built a data-driven agent-based model using **Mesa** library to simulate urban crime activities to examine crime rate fluctuations in different environmental contexts
- Developed a 3D interactive map to visualize predicted crime hotspots using **Streamlit** with inputs of crime date, crime types and threshold according to different predicting strategies
- Model yielded a Predictive Accuracy Index (PAI) of **7.2**, accompanied by an area coverage of 8.2%

TECHNICAL SKILLS

- Preferred programming languages: Python, JavaScript, HTML, CSS, Java
- Experienced with Git, React, Node.js, MySQL, MongoDb, MATLAB
- Skilled in Pandas, Matplotlib, Seaborn for data visualization, cleaning, analysis
- Familiar with TensorFlow, PyTorch, scikit-learn for ML/DL
- Volunteering: Responsible for organizing various cultural and sports student activities at University of Glasgow
- Language: English(Fluent), Mandarin(Native)
- Interests: Video editing skills with Premiere software (200k+ YouTube views)