XIUYU LIU

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PERSONAL STATEMENT

Motivated, self-directed graduate student with exceptional background from computer science (Master) and transportation engineering (PhD). Actively looking for roles as a Full Stack Developer, Software Engineer, Machine Learning Engineer or Data Scientist.

EDUCATION

University of Pennsylvania **Expected in 05/2022**

- Master of Computer and Information Technology GPA: 4.0/4.0

University of Illinois at Urbana-Champaign **Expected in 05/2022**

- PhD in Transportation Engineering GPA: 4.0/4.0
- Thesis topic: Signal Process and Machine Learning in Vehicle-pavement Interaction

Southeast University, Nanjing, China **Sept. 2011-Jun. 2018**

- M.S. and B.S. in Transportation Engineering, graduated in top 1% of class

WORK EXPERIENCE

Research Assistant, University of Illinois at Urbana-Champaign Aug. 2018 - Present

• Worked on application of computer vision in pavement engineering. Developed an automatic close-range photogrammetry (ACRP) system in **MATLAB** and **Python** to collect pavement surface texture data. Developed **machine-learning** based models to correlate texture information to pavement surface friction.

• Developed signal processing methods in **Python** for predicting vehicle traveling performance based on collected road roughness profile data. Developed state-space vehicle dynamic model to simulate vehicle vibrations. Built an interactive web interface using **Bootstrap** and **React** for data collection. The server side is implemented using **MongoDB** and **RESTful** API.

• Developed data-driven approaches for predicting tire-pavement contact stresses using tested and simulated data. A **deconvolutional neural network** and **generative neural network** were proposed and implemented in **TensorFlow** to decode tire information. The prediction error was reduced by 80% compared with traditional machine learning methods.

PROJECTS

Android Application of Covid Information Monitoring

• Developed an **android app** monitoring covid information in United States. The app displays important covid information (infection, hospitalization, vaccine) of areas requested by users. Integrated **Covid Now API** in the application to obtain real-time covid data. Utilized **SQLite** database to locally store and manage covid data offline. Developed **CRUD** operations on managing the covid-related information.

Single Image Supe-resolution (SR) based on Deep Learning

• Implemented SRCNN in **TensorFlow** to improve image resolution; and further improved performance by combining with traditional signal processing, using extended architectures and advanced loss functions, and applying with autoregressive model; The improved network achieved lower content and texture losses.

Database-driven Web-based Movie Recommendation

• Designed an interactive web interface (**Bootstrap** and **React**) for user login, movie searching and user account pages; Designed relational database schema (**MySQL**) for movie data recording and user data tracking; Implemented memory-based collaborative filtering in **PHP** for personal movie recommendations.

SKILLS

Programing: Java, Python, MATLAB, C, JavaScript/HTML/PHP **Databases**: MySQL, SQLite, MongoDB

Tools & Frameworks: Git, Linux, AWS, Android SDK, Bootstrap, jQuery, React

Machine learning: PyTorch, TensorFlow, Scikit-learn, Pandas

Others: Good research program planning; academic presentation and scientific paper experience