Xuan Jiang

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571-426-9968 xuanjiang@lbl.gov linkedin.com/in/xuan-jiang github.com/Xuan-1998 LBNL Scholar

Xuan is pursuing a Ph.D. at University of California, Berkeley in the field of Transportation Engineering. His research activity focuses on facing the current challenges related to the design of a microscope and mesoscopic approach for the analysis of a transport system in an urban context in order to more in detail estimate its impacts and those related to different scenarios that may include the introduction of new technologies, strategies, and means of transport of the future, as well as more specific studies: vertiport location selections for urban air mobility, analysis of the resilience of the airport network following unforeseen events and so on.

Research Experience

Lawrence Berkeley National Laboratory, Berkeley, CA **June 2021 – Now**

Graduate Student Researcher in the EA - Energy Analysis Env Impacts Division. Develop models and software implementations of travel behavior and multi-modal transportation systems. Supervisor: Thomas Wenzel

University of California, Berkeley, CA **August 2020 – Now**

Research Scholarship in Transportation Engineering at Civil and Environmental Department's Aviation Innovation Research Lab. Develop GPU-based parallel multi-modal micro traffic operation simulator. Supervisor: Prof. Raja Sengupta. Co-supervisor Prof. Joan Walker, Prof. Mark Hansen, Prof. Daniel Rodriguez

National Academies of Sciences, Engineering, and Medicine, Washington DC **April 2022 – Now**

Young Member in transportation research board standing committee on aviation safety, security and emergency management (AV090) Review aviation-related papers, triennial strategic plan, and airport cooperative research program (ACRP) problem statements. Chair: Gaël Le Bris

Academic Education

University of California, Berkeley **June 2021 – May 2025(Exp.)**
PhD in Transportation Engineering (Minor in Computer Science) GPA:4.0 / 4.0 *Berkeley, CA*
Courses: Applications of Parallel Computers, Introduction to ML, Back-End Web Architecture, Software Dev

University of California, Berkeley **July 2020 – May 2021**
Master of Science in Transportation Engineering GPA:4.0 / 4.0 *Berkeley, CA*
Courses: Data Structures and Algorithms, Introduction to Database Systems, Introduction to AI, Operating Sys

Tongji University **Sep. 2016 – May 2020**
Bachelor of Science in Traffic Engineering | Object-Oriented Design, Compilers, Internet Protocols *Shanghai, China*

Experience

Lawrence Berkeley National Laboratory **June 2021 – Dec. 2022(Exp.)**
GSRA LBNL-UCB-STI/beam/Xuan/ActivitySim-micromobility *Berkeley, CA*

- Deploy agent based traffic simulation on AWS EC2 instances to enhance cloud computation and multi-task implement but also on NERSC(National Energy Research Scientific Computing Center) to utilize the Cray EX system with AMD CPUs and NVIDIA A100 GPUs Berkeley Lab owns
- Inherit the Akka FSM trait which provides a domain-specific language for programming agent actions as a finite state machine to achieve the goal of doing **traffic simulation based on 2,466,019** households travel plans from bay area

China Ocean Shipping Company **July 2020 – Oct. 2020**
Software Engineer Intern *Shanghai, China*

- Built an enterprise-level Database that integrated **100,000+ shipping information** on top of Hadoop and Hive.
- Implemented the backend Restful API to provide up-to-date access to Google Earth and Kylin data.
- This API provided an intelligence utility that equipped **2000+ analysts** in the company.

Eastrong International Logistics Co., Ltd **Jan. 2018 – May. 2018**
Software Engineer Intern *Shanghai, China*

- Conducted an inventory forecast by building a linear regression model in Python based on historical data, which increases the **accuracy** by **17%** and further analyze the causality relationships between different factors.
- Validated the prediction on dataset, and developed a dynamic visualization dashboard with JavaScript and Tableau.

Published Papers

Jiang, X., Peng, X., Bulusu, V., Poliziani, C., Chatterji, G., & Sengupta, R. (2022, September). A Metrics-based Method for Evaluating Corridors for Urban Air Mobility Operations. In **2022** IEEE International Smart Cities Conference (ISC2) (pp. 1-7). IEEE. [Conference paper] DOI: 10.1109/ISC255366.2022.9922442

Jiang, X., & Song, L. (**2022**). Incompressible Fluid Simulation Parallelization with openMP and CUDA. [Conference paper] DOI: 10.31219/osf.io/aj3wt

Jiang, X. (**2022**). Optimizing Matrix Multiplication. [Conference paper] DOI: 10.31219/osf.io/dfpgq

Chen, A., Park, B., & **Jiang, X**. (**2022**). Parallelizing a Particle Simulation on Nersc's High Performance Computer Cori. [Conference paper] DOI: 10.31219/osf.io/xmtbk

Pham, H., **Jiang, X**., & Zhang, C. (**2022**). Causality and Advanced Models in Trip Mode Prediction: Interest in Choosing Swissmetro. [Conference paper] DOI: 10.31219/osf.io/m4w38

Jiang, X., Peng, X., Bulusu, V., Poliziani, C., Chatterji, G., & Sengupta, R. (**2022**). Air Corridor Evaluation with Purpose-specific Metrics. [Conference paper] DOI: 10.31219/osf.io/fqu3k

Everts, J., & **Jiang, X**. (**2021**). Making sense of electrical vehicle discussions using sentiment analysis on closely related news and user comments. arXiv preprint arXiv:2112.12327.[Conference paper] DOI: 10.48550/arXiv.2112.12327

Bauranov, A., Parks, S., **Jiang, X.**, Rakas, J., & González, M. C. (**2021**). Quantifying the Resilience of the US Domestic Aviation Network During the COVID-19 Pandemic. Frontiers in Built Environment, 7, 642295. [Journal paper] DOI: 10.3389/fbuil.2021.642295

Chai, C., Lu, J., **Jiang, X**., Shi, X., & Zeng, Z. (**2021**). An automated machine learning (automl) method for driving distraction detection based on lane-keeping performance. arXiv preprint arXiv:2103.08311. [Journal paper] DOI: 10.48550/arXiv.2103.08311

Huang, W., Yan, C., & **Jiang, X**. (**2019**). Chemical and rheology evaluation on the field short-term aging of high content polymer modified asphalt (No. 19-00486). [Conference paper] URL: https://trid.trb.org/view/1572334

Journals Peer Reviewer

TRB2023 (19 articles - Publons)

Frontiers in Psychology (1 article - Accepted)

IEEE Intelligent Transportation Systems Society Conference 2022 (3 articles)

Awards

Joseph M Sussman 2021 Best Paper Prize

NSF AI workshop Phase II Travel Award

Projects

Shenzhen Metro Website | *Java, Docker, JavaScript, React, Spring Cloud, JWT, Mybatis Plus, Redis, AWS* *GitHub*

- Split-Stack-Developed an online metro application that includes a user system and a management system.
- Implemented authority management, subway management, statistical analysis, and line classification management.
- Used Spring Boot for the back-end, React+Hooks For the front-end, and Amazon S3 to store files.
- Deployed the web application to real users with AWS Elastic Beanstalk.

Shanghai Airport App | *Java, Spring Boot, Shiro, Redis, Mybatis, Docker, Swagger* *GitHub*

- Established the passenger management and travel management modules' back-end of a commercial mobile app.
- Deployed and achieved distributed architecture, load balancing and hot backup via Haproxy & XtraBackp.
- Optimized around **300** SQL query through Slow Query Log, and reduced **80%** query time through ElasticSearch.

Interpreter for a new Script Language | *Java, C, Git, GluonJ* *GitHub*

- Designed a new high-level dynamically typed, multi-paradigm, interpreted programming language.
- Implemented the interpreter with java which features garbage collection, lexical scope, closures, classes, and inheritance.
- Optimized the traversal of Abstract Syntax Tree and improved the performance by redesigning the Virtual Machine.

Technical Skills

Languages: Java, Go, Python, C/C++, HTML/CSS, JavaScript, SQL

Frameworks/DataBases: gRPC, Spring Boot, Node.js, MyBatis, MySQL, MongoDB, Redis, Amazon S3

Developer Tools: Gradle, Maven, Git, Docker, Nginx, Tomcat, Amazon EC2, Elastic Beanstalk