ZHIPENG LING

EDUCATION

Northeastern University | San Jose, CA
Master of Science, Computer Science | Jan 2025 – Present
Breadth areas: Artificial Intelligence and Data Science & Systems and Software
Coursework: Algorithms, Distributed Systems, Full Stack Engineering, Database Design, Cloud Architecture, System Design
The University of Sydney | Sydney, Australia | Jun 2017 – Oct 2020
Bachelor of Computer Science and Technology
Double major: Computer Science & Information System
Study Exchange Experience: Northeastern University in Boston (2019-2020), Shanghai Jiao Tong University (2019)

SKILLS & CERTIFICATIONS

Expertise: SLAM, Distributed Computing, Full-Stack Development, Microservices Architecture, AI Modeling and Deployment.
Coding Languages: C++ (Bazel, CMake, Library: Eigen, Ceres), Python (Django, Flask, Celery, Scipy, Numpy, Pytorch), Java (Spring Cloud, Spring Boot), JavaScript (Node.js, React, Vue, Electron, Three.js, Mapbox GL), SQL, MongoDB, ClickHouse
Skills: GDB, Cloud DevOps (**AWS**, Jump Server), RESTful API development (Postman, Swagger)
Tools: Git, Docker, Linux, Jenkins, CI/CD, VScode for engineering tasks.

PROFESSIONAL EXPERIENCE

XPENG Motors Technology Co., Ltd. (NYSE: XPEV)
Software Development Engineer | Nov 2020 – Jan 2025
High-Precision Map Annotation and Editing Platform Development
- Developed microservice infrastructure with **Spring Cloud** for scalable annotation tools and **API** endpoints.
- Implemented machine learning inference pipeline using **Python** and **Docker** for semi-automated map generation.
- Built **2D/3D** web applications using **React** and **Three.js** for high-precision map editing.
- Designed **GIS-based** toolchain for map generation, optimizing quality assurance with **80%** efficiency improvement.
- Architected service mesh topology with **Kubernetes** orchestration enabling horizontal scaling across production servers.

Crowdsourced Offline Cloud-Based Mapping Project
- Engineered data pipeline processing **1+ billion** entries monthly using **Hadoop** and **Spark** frameworks.
- Optimized distributed algorithms for BEV data with **C++** by **Eigen** and **Ceres**, improving processing performance by **65%**.
- Developed alignment modules using **Python** and **C++** for cross-dataset compatibility across map standards.
- Integrated machine learning models with **MM Detection** and **ONNX** deployment, accelerating inference time by **40%**.
- Built ETL pipelines with **Celery** and **Redis** for real-time feature extraction from perception data.

PingAn Technology Co., Ltd.
Software Engineering Intern | Jul 2020 – Nov 2020
- Architected distributed web with **Spring Boot** crawler system supporting **20,000+** projects and **60+** server deployments.
- Designed RESTful API endpoints with **Node.js** and **Express** for script management and monitoring.
- Implemented concurrency control mechanisms with **Redis** for coordinating multiple crawler instances simultaneously.
- Developed cross-platform desktop application using **Electron** and **Vue** with **HTTP** streaming capabilities.

Roche Pharmaceutical Co., Ltd.
Technical Department Intern | Mar 2020 – Jul 2020
- Implemented interactive **Tableau** and **SAP MM** dashboards with **SQL** queries for procurement data visualization and analysis.
- Assisted integration of global OA systems with **REST API** testing using **Postman** framework.

PROJECT & RESEARCH EXPERIENCE

Multi-Source Strategy Point Updates | Backend & Algorithm Development | Mar 2024 – Jan 2025
- Implemented **Java Spring Cloud** microservices for distributed queries with **98%** nationwide coverage performance.
- Designed incremental update system with **MySQL** transactions for maintaining concurrent map data integrity.
- Developed matching algorithms with **90%+** success rate for automated attribute assignment across road networks.
- Optimized CI/CD workflows with **Jenkins** and **Docker** for seamless deployment of backend services.

Trajectory Road-Matching Module | Algorithm Development | May 2023 - Mar 2024
- Applied **Hidden Markov Models** for trajectory alignment with precision within **3 meters** margin.
- Engineered probabilistic path optimization achieving **90%+** success rate for automated trajectory filtering.
- Improved distributed processing with **Celery-Redis** framework, increasing throughput by **52%-72%** with stable performance.
- Implemented parallel computing techniques with **C++** multithreading for real-time data processing capabilities.

Microservices and Map Editor Platform Development | Full Stack | Jul 2021 - Mar 2023
- Developed semi-automated map editing tools with **Python** and **JavaScript**, achieving **90%** automation rate.
- Built comprehensive **2D/3D** web visualization using **React**, **Leaflet.js**, and **WebGL** for real-time interaction.
- Designed distributed microservices architecture with **Spring Cloud**, **Nacos**, and **Docker** for scalable deployment.
- Integrated heterogeneous services with **Spring Boot**, **Node.js**, and **Django** using **RESTful API** standards.
- Implemented robust data storage solutions with **MySQL**, **ClickHouse**, **Redis**, and **OSS** for high availability.

PUBLICATIONS & PATENTS

1. **Z Ling**, Q Xin, Y Lin, G Su, Z Shui - arXiv preprint arXiv:2407.09530, 2024, Optimization of autonomous driving image detection based on RFAConv and triplet attention.
2. B Liu, G Cai, **Z Ling**, J Qian, Q Zhang - Applied and Computational Engineering, 2024, Precise Positioning and Prediction System for Autonomous Driving Based on Generative Artificial Intelligence.
3. X Xu, Z Xu, **Z Ling**, Z Jin, SQ Du - ISPP 2024, Comprehensive implementation of TextCNN for enhanced collaboration between natural language processing and system recommendation.
4. A Method for Extracting Road Attributes Based on OSM Road Network Matching (P2024864CN1)
5. Data Editing Method Based on BEV Stitching (P20211500CN1)
6. JX Zhan, **Z Ling**, Z Xu, L Guo, S Zhuang - Journal of Advanced Computing Systems, 2024, Driving efficiency and risk management in finance through AI and RPA.