YUQIANG LIN

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SUMMARY

PhD researcher in computer vision and artificial intelligence for intelligent transportation systems. Experienced in multimodal large language models, agentic AI systems, machine learning, and edge computing. Passionate about developing innovative AI solutions and translating research into practical systems for real-world applications.

EDUCATION

University of Bath, Fully Funded by UKRI EPSRC — Bath, United Kingdom
Master of Research, Core Module: System Thinking, Business Process, Innovative Thinking — Sep 2022 – Sep 2023
Integrated PhD in Advance Automotive Propulsion System — Sep 2022 – Present

Chongqing University of Technology, GPA:89/100, Rank:1/82 — Chongqing, China
Bachelor of Engineering in Vehicle Engineering — Sep 2018 – Jun 2022

RESEARCH PROJECTS

Multi-Agent Retrieval-Augmented System for Traffic Anomaly Understanding *May 2026 – Present*

- Designed and implemented an agentic RAG framework that orchestrates video captioning, open-vocabulary object tracking, memory retrieval, and visual question answering agents for traffic anomaly understanding.

TAU-R1: Traffic Anomaly Understanding using Visual Language Models *Oct 2025 – Mar 2026*

- Developed a two-layer Qwen3VL-based framework for real-world traffic anomaly classification and summarisation.
- Collected, annotated, and released *Roundabout-TAU*, a real-world roadside traffic anomaly understanding dataset supporting anomaly categorisation, grounding, reasoning, and summarisation.
- Designed a task-specific two-stage training pipeline combining decomposed-QA enhanced supervised fine-tuning and GRPO-based post-training, with ablation studies confirming the effectiveness of each training stage.
- Demonstrated 50% improvement in anomaly classification precision and 18.85% improvement in anomaly event summarisation performance, while achieving real-time-capable deployment on Nvidia Jetson Orin edge device.

Edge Powered Real-Time Multi-Camera Vehicle Tracking System *Oct 2023 – Sep 2025*

- Proposed an edge-server multi-camera vehicle tracking framework for real-world urban traffic perception, integrating detection, single-camera tracking, vehicle ReID, geo-mapping, camera-link modelling, and cross-camera association.
- Collected, annotated, and released *RoundaboutHD*, a high-resolution real-world dataset for MCVT and related sub-tasks, including object detection, single-camera tracking, and vehicle ReID.
- Designed an end-to-end MCVT pipeline with modules includes YOLO-based detection, single-camera tracking, tracklet-level feature extraction, geo-mapping, self-supervised camera-link model, and cross-camera association.
- Optimized edge deployment through algorithmic and systems engineering, including an adaptive workload control scheme, TensorRT acceleration, and CPU core pinning for certain tasks to enable stable real-time throughput.
- Engineered the framework as a production-oriented distributed system using Docker, Protocol Buffers, Redis, and TimescaleDB to support reproducible deployment and scalable data management.
- Demonstrated stable real-time throughput with competitive tracking accuracy, achieving 72.59% IDF1 on *RoundaboutHD* and 55.17% IDF1 on *CityFlow*, including a 44.45% improvement over the baseline on *RoundaboutHD*.

OTHER PROJECT

Car Dealer B2B Outreach — OpenClaw Workflow *Apr 2026 – Present*

- Developed an agentic workflow for automated B2B lead generation and outreach, orchestrating dealer discovery, data processing, contact enrichment, and personalised multi-channel messaging.
- Integrated heterogeneous tools and APIs, including Google Maps Places API, Tavily Search, LinkedIn, Facebook, Instagram, WhatsApp, SMTP, and Excel export into a unified multi-agent pipeline.
- Engineered a configurable OpenClaw workspace with modular skills, quota-aware execution, and human-in-the-loop approval for scalable and safe automation.

WORK EXPERIENCE

Research Intern, University of Washington Sep 2025 – Dec 2025 *Seattle, USA*

- Collaborated with UW researchers on TAU-R1 project; contributed to funding applications and grant writing.

Teaching Assistant, University of Bath Sep 2023 – Present *Bath, UK*

- Delivered lectures; ran tutorials/labs; handled student Q&A and coursework marking.

SELECTED PUBLICATIONS

- *TAU-R1: Visual Language Model for Traffic Anomaly Understanding*. *arXiv preprint.*
- *Edge Assisted Multi-Camera Vehicle Tracking Framework for Real-Time and Scalable Deployment*. *Under review: Transportation Research Part C: Emerging Technologies.*
- *RoundaboutHD: High-Resolution Real-World Urban Environment Benchmark for Multi-Camera Vehicle Tracking*. *arXiv preprint. Under review: Nature Scientific Data.*
- *City-Scale Multi-Camera Vehicle Tracking System with Improved Self-Supervised Camera Link Model*. *In ICPAMI 2024.*
- *Ablation Study for Multi-Camera Vehicle Tracking Using the CityFlow Dataset*. *In ICMV 2024.*
- *Vehicle Following Hybrid Control Algorithm Based on DRL and PID in Intelligent Network Environment*. *SAE Technical Paper 2022-01-7113, 2022.*
- *A Hierarchical Model Predictive Control Based Connected Series Hybrid Electric Vehicle Energy Management Considering Speed Planning*. *SAE Technical Paper 2022-01-7064, 2022.*

SKILLS & AWARDS

Programming Languages	Python, C++, SQL, Bash
AI Frameworks	PyTorch, Hugging Face Transformers, TRL, OpenCV, NumPy
LLMs & Agentic AI	RAG, LangGraph, LangChain, FAISS
Tools & Platforms	Linux, Docker, Git, CUDA, Redis, Protobuf
Language Skills	Chinese (Native), English (Professional Working Proficiency)
Selected Awards	Best Presentation (SAE 2022); Best Presentation (ICPAMI 2024); Excellent Oral Presentation (ICMV 2024)