

Hsiang-Jui Lin (Jerry Lin) | 林祥瑞

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PhD candidate at National Taiwan University specializing in autonomous vehicle systems, multi-modal sensor fusion, and V2X communication. Systems programmer with expertise in Rust, C/C++, and distributed consensus algorithms. 5+ years of industry experience in R&D roles at Microsoft and ADLINK Technology, with a focus on scalable backend systems and real-time networking.

Education

- **PhD Program in Computer Science and Information Engineering, National Taiwan University** (2021–Present): Advisor: Professor Chi-Sheng Shih | Research: Autonomous vehicles, sensor fusion, V2X communication
- **Master of Science in Computer Science and Information Engineering, National Taiwan University** (2021)
- **Bachelor of Science in Computer Science and Information Engineering, National Taiwan University** (2016): Thesis: *Solving Graph Domination Problems on Distance-Hereditary Graphs Using Split Decomposition*

Research Projects

- **AutoSDV (Autoware Software-Defined Vehicle)** (2023–Present): Main contributor to [AutoSDV](#), an open-source autonomous driving platform. Designed and implemented the complete vehicle architecture and software stack based on Autoware. Developed hardware integration for practical sensors, enabling affordable self-driving research platforms for educational institutions.
- **Multi-Modal Autonomous Vehicle Communication Control** (2023–2024): Led development of innovative communication protocols for heterogeneous autonomous vehicle platforms in collaboration with KingwayTek (勤崴國際).
- **Real-Time Perception and Collaborative Driving** (2021–2023): Developed V2V cooperative decision-making algorithms and collaborative perception systems with National Yang Ming Chiao Tung University.
- **Cross-Domain Time-Sensitive Networking** (2022–2023): Researched deterministic networking protocols using time-sensitive networking (TSN) technologies for vehicular applications with ADLINK Technology (凌華科技).
- **Smart Cockpit Interactive Systems** (2023–2025): Leading research on gesture-based interaction and spatial audio systems for next-generation vehicle interiors with AU Optronics Corporation (友達光電).

Publications & Presentations

Publications

- **Unsupervised Training Framework for 3D Point Cloud Object Detection Model** (2025): Developing self-supervised learning approaches for 3D object detection in autonomous driving applications.
- **Self-Supervised Multi-LiDAR Object View Generation Using Single LiDAR** (2023): Proposed novel method for generating multi-view LiDAR representations from single sensor input, improving perception robustness.
- **A Performance Study on the Throughput and Latency of Zenoh, MQTT, Kafka, and DDS** (2023): Comprehensive evaluation of pub/sub frameworks demonstrating significant throughput improvements in specific scenarios. (1 citation)
- **Scalable and Bounded-time Decisions on Edge Device Networks using Eclipse Zenoh** (RTSCA 2022): Developed consensus algorithm achieving deterministic decision-making within 100ms bounds. (4 citations)
- **Prediction of Human Intention in Vehicles, Pedestrians and Bicyclists Interactions** (IEEE ITSC 2021): Developed deep learning models for predicting road user behavior, improving autonomous vehicle safety. (1 citation)
- **Master's Thesis: Occlusion-Resistant Tracking Based on Idempotent Adjunction Relationships** (2021): Achieved 0.3m average displacement error in vehicle tracking under 70% occlusion conditions.
- **Undergraduate Thesis: Graph Domination Problems on Distance-Hereditary Graphs** (2016): Discovered $O(n^2)$ algorithm improving upon previous $O(n^3)$ solutions.
- **機器人程式設計與實作：使用 Java** (Robotic Programming Design and Implementation Using Java) (2013): Published technical book on LEGO NXT robotics programming. ISBN: [9789862768228](#)

Presentations

- **ROS2 ♥ Rust** (COSCUP 2024): Presented integration techniques for using Rust with ROS2 (Robot Operating System 2), showcasing type-safe robotics programming and performance benefits. [Session details](#)
- **Highly Performant Dataflow in Stream-Oriented Programming with Rust** (COSCUP 2023): Demonstrated significant performance improvements using async stream processing. [Session details](#)

Professional Experience

- **Research & Development Assistant, ADLINK Technology Inc.** (2021–2024): Developed distributed consensus algorithms for Eclipse Zenoh middleware, achieving sub-millisecond latency for edge computing applications.
- **Research & Development Assistant, Microsoft Taiwan** (2018–2019): Optimized Bing's reverse geocoding backend services, improving query response time and system scalability.
- **Software Developer, CAVEDU Education** (CAVEDU 教育團隊) (2010–2016): Led AppInventor curriculum development. Authored technical documentation and conducted workshops on robotics programming.

Technical Skills

Programming Languages: Rust, C/C++, Python, Java, CUDA, OpenCL

Frameworks & Tools: Autoware, ROS/ROS2, PyTorch, TensorFlow, Eclipse Zenoh, DDS, Docker, Git

Specializations: Distributed Systems, Parallel Computing, Computer Vision, V2X Communication, Real-time Systems

Open-Source Projects

- **AutoSDV** (2022–Present): Main contributor to the Autoware Software-Defined Vehicle platform. Provides a complete autonomous driving solution from hardware specifications to software implementation, democratizing self-driving research for educational institutions.
- **ddshark** (2023): Real-time RTPS protocol analyzer similar to htop, supporting multiple DDS implementations.
- **Additional projects:** github.com/jerry73204 —Including carla-rust, and other repositories.