# JUNYAN SU

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## RESEARCH INTERESTS

Control and Optimization with Applications in Intelligent Transportation and Energy Systems

## EDUCATION

**City University of Hong Kong** 2020.10-2025.10
Ph.D. in Data Science | Advisor Prof. Minghua Chen

- Thesis: Minimizing Emission and Carbon Footprint for Timely Heavy-Duty Truck Transportation

**ShanghaiTech University** 2015.09-2019.06
B.E. in Computer Science and Technology | Advisor: Prof. Boris Houska and Dr. Yuning Jiang
GPA: 3.84/4.0, Rank: 3/95

- Thesis: Distributed Machine Learning via ALADIN

## RESEARCH AND VISITING EXPERIENCE

**KTH Royal Institute of Technology** May 2024 - Sep 2024
Visiting Ph.D. Student | Advisor: Prof. Karl H. Johansson

- Research on optimization for UAV scheduling and truck fleet management

**Carnegie Mellon University** Jun 2018 - Aug 2018
Visiting Research Intern, RISS Robotics Summer Program | Advisor: Prof. Howie Choset & Lu Li

- Verilog-based logic circuit design for multi-sensor data retrieval, minimizing CPU overhead (2000ms to 5ms).

**University of California, Berkeley** Aug 2018 - May 2019
Visiting Student | GPA: 3.95/4.0

- Core Courses: Introduction to Robotics (A), Linear Systems Theory (A), Mechatronics (A), Programming Languages and Compilers (A-), Robot Control and Interaction (A), Numerical Methods (A).

## JOURNAL ARTICLES

1. Junyan Su, Qiulin Lin, and Minghua Chen. Optimizing Carbon Footprint in Long-Haul Heavy-Duty E-Truck Transportation. *Nature Communications*, accepted for publication, 2025.
2. Qiulin Lin, Junyan Su, and Minghua Chen. Optimal Algorithms for Online Age-of-Information Optimization in Energy Harvesting Systems. *IEEE Transactions on Networking*, 2025.
3. Yuning Jiang, Kristína Fedorová, Junyan Su, Juraj Oravec, Boris Houska, and Colin N. Jones. Fast and Lightweight: A Real-Time Parallelizable MPC for Embedded Systems. *European Journal of Control*, page 101217, 2025.
4. Junyan Su, Runzhi Zhou, Qingyu Liu, Wenjie Xu, Minghua Chen, and Haibo Zeng. Minimizing Emission for Timely Heavy-Duty Truck Transportation. *IEEE Transactions on Intelligent Transportation Systems*, 2024.
5. Yuning Jiang, Junyan Su, Yuanming Shi, and Boris Houska. Distributed Optimization for Massive Connectivity. *IEEE Wireless Communications Letters*, 9(9):1412–1416, 2020.

## CONFERENCE PAPERS

1. Qiulin Lin, Junyan Su, and Minhua Chen. Competitive Online Age-of-Information Optimization for Energy Harvesting Systems. In *Proceedings of IEEE INFOCOM*, 2024.

2. Junyan Su, Qiulin Lin, Minghua Chen, and Haibo Zeng. Minimizing Carbon Footprint for Timely E-Truck Transportation: Hardness and Approximation Algorithm. In *Proceedings of IEEE Conference on Decision and Control (CDC)*, 2023. (Invited paper).
3. Junyan Su, Qiulin Lin, and Minghua Chen. Follow the Sun and Go with the Wind: Carbon Footprint Optimized Timely E-Truck Transportation. In *Proceedings of the ACM e-Energy*, 2023. Best Paper Award.
4. Qiulin Lin, Yanfang Mo, Junyan Su, and Minghua Chen. Competitive Online Optimization with Multiple Inventories: A Divide-and-Conquer Approach. In *Proceedings of ACM SIGMETRICS*, 2022.
5. Junyan Su, Yuning Jiang, Altuğ Bitlislioğlu, Colin N. Jones, and Boris Houska. Distributed Multi-Building Coordination for Demand Response. In *Proceedings of 21st IFAC World Congress*, 2020.
6. Ling Gao, Junyan Su, Jiadi Cui, Xiangchen Zeng, Xin Peng, and Laurent Kneip. Efficient Globally-Optimal Correspondence-Less Visual Odometry for Planar Ground Vehicles. In *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, 2020.

## AWARD AND RECOGITION

**Academic Awards:**

- Outstanding Academic Performance Award, City University of Hong Kong, 2023
- ACM e-Energy Best Paper Award, 2023

**Competition Awards:**

- Second Place, Meituan UAV Competition, 2023

**Entrepreneurship Grants:**

- HK Tech 300 & HKTSP Seed Fund, 2022

**Scholarships and Student Awards:**

- CDC Student Travel Grant & Workshop Support, 2023
- Research Tuition Scholarship, City University of Hong Kong, 2023
- Outstanding Graduate Award, ShanghaiTech University, 2019

## SOFTWARE

**E2Pilot: A Navigation Platform for Energy-Efficient Truck Transportation** **Main Developer**

- Users can input origin, destination, and deadline, then the system will give the energy-efficient path and speed plan.
- Project completed its first real-world road test, achieving 5% energy reduction.
- Several published papers, including one in the Nature Communications.
- The project has received support from the HK Tech 300 & HKTSP seed fund.

**ParExMPC: A Lightweight MPC Design Toolbox** **Main Developer**

- Given a nonlinear system model and an optimization objective, users can generate a lightweight MPC controller through the toolbox's MATLAB interface.
- The toolbox can generate C code. The generated code can be deployed on embedded devices with as little as 2KB of memory.

## PRESENTATIONS

- "E2Pilot: A Navigation Platform for Energy-Efficient Timely Transportation of Long-Haul Heavy-Duty Trucks", Prototypes for Humanity, Dubai, November 2024.
- "Minimizing Carbon Footprint for Timely E-Truck Transportation: Hardness and Approximation Algorithm", CDC 2023, Singpore, December 2023.

- "Follow the Sun and Go with the Wind: Carbon Footprint Optimized Timely E-Truck Transportation", ACM e-Energy 2023, Orlando, Florida, June 2023.

## PATENTS

- M. Chen., J. Su, and Q. Lin, "Carbon Footprint Optimized Timely E-Truck Transportation", 14 Aug 2025, U.S. Patent No. US2025/0258006.

## TECHNICAL SKILLS

- **Main contributor** of the simulation work for all co-authored papers
- **Programming Languages:**
  - Julia, Python, C/C++, MATLAB, JavaScript, Swift
- **Robotics:**
  - ROS, STM32, Arduino, SolidWorks, RTOS, 3D printing, PCB circuit design
- **Optimization and OR Tools:**
  - JuMP.jl, Gurobi, Google OR-Tools
- **Other Software/Tools:**
  - Cadence, Verilog, Git, Linux development environment, LaTeX