Yunhao LIANG

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EDUCATION

University of California, Berkeley (UCB) (College of Engineering) **CA, US**
M.E. in Industrial Engineering and Operations Research | GPA: 3.98/4.0 *Aug 2024 - May 2025*
- Relevant coursework: Machine Learning, Deep Learning, Applied Optimization, Stochastic Processes, Supply Chains and Logistics Management

University of Pittsburgh (Swanson School of Engineering) **PA, US**
B.S. in Industrial Engineering, minor in Computer Science | GPA: 3.70/4.0 *Aug 2022 - May 2024*
- Relevant coursework: Supply chain Analysis, Engineering Economics, Game theory

Sichuan University (Sichuan University-Pittsburgh Institute) **Chengdu, China**
B.S. in Industrial Engineering | GPA: 3.43/4.0 *Aug 2020 - May 2022*
- Relevant Courses: Human Factor Engineering, Probability and Statistics

PUBLICATIONS

- Chen, S., Zhang, X., Wang, W., **Liang, Y.**, He, W., & Tan, Z. (2024). The effect of smart city policies on city innovation: A quasi-natural experiment from the smart city pilot cities in China. *Sustainability*,16(8007). https://doi.org/10.3390/su16188007
- **Liang, Y.**, Qu, Y., Yang, J., Lin, S., Shen, Max. (Under Review at AAAI 2026). Everyone Contributes! Incentivizing Strategic Cooperation in Multi-LLM Systems via Sequential Public Goods Games. http://arxiv.org/abs/2508.02076
- **Liang, Y.**, Liu, Q., Teaya, Yang., Mark W. Mueller (Working Paper). Optimizing UAV path planning and wireless data transfer under battery and communication constraints.

RESEARCH EXPERIENCE

Sequential Public Goods Game (SPGG) with Multi-LLM Agents Cooperation. **HK, China**
Research Assistant, Supervisors: Prof. Max Shen & Prof. Shaochong Lin, HKU *May 2025 - Present*
- Developed a multi-agent framework based on the Sequential Public Goods Game (SPGG) to study cooperation among LLM-based agents
- Incorporated game-theoretic concepts such as Subgame Perfect Nash Equilibrium, belief updating, and conditional cooperation to model and interpret emergent behaviors across different information regimes (full vs. partial observability)

Path Planning and Data Transmission for UAVs in Precision Agriculture **CA, US**
Research Assistant, Supervisor: Prof. Mark W. Mueller, UCB *Sep 2024 - May 2025*
- Developed optimization and reinforcement learning-based models for UAV path planning, explicitly modeling operator behaviors and decision-making under communication constraints
- Explored human-AI interaction frameworks by simulating decision-making scenarios involving UAV operators and intelligent autonomous systems
- Conducted research on automating UAV operations by integrating path planning algorithms with sensor-based decision-making frameworks to enhance overall system efficiency
- Drafting a paper on optimizing UAV path planning and wireless data transfer

Image-to-Text AI System Based on Large Language Models | Link **CA, US**
Independent Project *Feb 2025 - Mar 2025*
- Built an AI pipeline that processes visual data (e.g., forms, handwritten notes) into structured text using multi-modal large language models
- Explored prompt engineering and model fine-tuning for Pix2Text and Pix2Struct to improve accuracy and generalizability
- Developed a Mini Program interface for real-world deployment; backend in progress
- Gained practical experience in handling unstructured data, LLM integration, and AI system development for intelligent decision-making

Smart City Policies and Urban Innovation **Chongqing, China**
Research Assistant, Supervisor: Prof. Zhixiong Tan, Chongqing University *Aug 2023 - Aug 2024*

- Investigated the impact of China's Smart City Pilot Plan on urban innovation using a multi-period difference-in-differences (DID) model
- Developed robust empirical models to analyze the effects of smart city policies on industrial upgrading and informatization in 296 prefecture-level cities from 2001 to 2021
- Conducted extensive data curation and formal analysis, focusing on urban innovation indicators
- Collaborated on the drafting and editing of a research paper

Blood Donation Willingness Math Model and Supply Chain Optimization **PA, US**

Research Assistant, Supervisor: Prof. Bo Zeng, University of Pittsburgh *Oct 2023 - Feb 2024*

- Collaborated on analysis of supplier-demand dynamics in blood transfusion systems within Kenyan hospitals
- Created simulation models to prioritize blood transfusion demand and inventory levels utilizing Simio
- Coordinated with doctors from the University of Pittsburgh Medical Center (UPMC) to assess the practical feasibility of the proposed plan in real-world scenarios

Music Streaming Platform Establishment | Link **Chengdu, China**

Member, Music Association, Sichuan University *Jan 2023 - Nov 2023*

- Designed a proprietary music streaming platform tailored for singer-songwriter groups within the university
- Developed and implemented a MySQL database using Java Spring Boot, supporting CRUD operations and query optimization
- Collaborated with team members to integrate customized Vue.js frontend with Java backend services

Inverse Operation Research **PA, US**

Research Assistant, Supervisor: Prof. Tarwoo Lee, University of Pittsburgh *Jan 2023 - Mar 2023*

- Conducted literature review for foundational concepts and existing methods of inverse optimization
- Investigated inverse optimization methods based on both linear and nonlinear programming

PROFESSIONAL EXPERIENCE

Improving Efficiency: Alstom's Subassembly Layout Overhaul **PA, US**

Supply Chain Analyst Intern, Alstom Company *Jan 2024 - Apr 2024*

- Partnered with Alstom to address inefficiencies in their West Mifflin facility's subassembly process for airport rail systems
- Integrated Lean Six Sigma, 5S methodologies, and facility layout theory to improve workflow and space utilization, achieving a potential 49% improvement in layout efficiency
- Employed systematic layout planning and visual management tools to enhance process efficiency and team communication

Sichuan Dazhou Iron & Steel Group Co., Ltd. **Dazhou, China**

Data Analyst Intern, Technology Center *Jul 2022 - Aug 2022*

- Participated in production data analysis, monitored key production indicators (e.g., steel output, energy consumption), assisted in optimizing production plans, and improving material flow efficiency
- 15 sets of data from the production workshop (including blast furnace operation, cold-rolled steel production, inventory turnover, etc.), data cleaning, feature extraction, and providing data support for production scheduling optimization

SKILLS

Languages: Chinese - native; English - fluent

Computer Techniques: Java, Python, R, Gurobi, PyTorch, SolidWorks, Simio, MATLAB, SPSS, Stata 16, MySQL

HONORS & COMMUNITY ENGAGEMENT

Team Honors List and Dean's List | University of Pittsburgh *Aug 2022 - Apr 2024*

Second Place | Swanson School of Engineering - Senior Project | University of Pittsburgh *Jan 2024 - Apr 2024*

Fung Excellence Scholarship (USD $15,000) | UCB *Aug 2024 - May 2025*

Engineering Student Association | Team member | University of Pittsburgh *Sept 2022 – Jul 2023*

Student Association | Photographer | Sichuan University - Pittsburgh Institute *Sept 2020 – Jul 2021*