Suri Liu

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EDUCATION

Dalian University of Technology   **Dalian, China**
Ph.D. student in Harbor, Coastal and Offshore Engineering   *Sept 2020 - present*
GPA: 86.6/100

Dalian University of Technology   **Dalian, China**
B.E. in Harbor, Waterway and Coastal Engineering   *Sept 2016 - June 2020*
GPA: 3.55/4.0

RESEARCH INTERESTS

My research uses mixed integer programming, and novel tools from simulation and knowledge graph to address combinatorial optimization challenges in logistics and transportation. Specific directions include integrated scheduling of operations in container terminal, and graph neural network for combinatorial optimization in transportation.

PROGRAM EXPERIENCE

Optimization of equipment scheduling in container terminal   **Dalian University of Technology**
(National Key Research and Development Program of China)   *Sept 2020 - present*

- Developed a digital-twin platform to map the operation process from reality to virtual world

- Integrated with knowledge graph to further analysis the operational performance in a holistic view

- Investigated a deep Q-learning model to assist twin stacking cranes scheduling in railway station of container terminal (**Outstanding Graduate Thesis**)

- Developed an optimization model for container truck scheduling, in the context of transshipping containers by suspension railway (in preparation)

Application of process optimization in oil and gas supply chain   **Cardinal Operations**
                                                                    Jan 2022 - Aug 2022 (Algorithm intern)

- Developed a MILP model for crude oil scheduling, exactly addressed long-distance pipeline transportation characteristics using a series of linear constraints

- Undertook most of the coding tasks as the main programmer

- Accelerated the solving process by relaxing & rounding, adding cuts, parameter tuning, etc.

- Proposed a two-step framework to linearize the physical property constraints in pooling problem

- Designed user interface to enable manual intervention by converting user requirements to constraints

- Applied the model to real-world costal refinery and solved crude oil scheduling problems, highly outperformed the previous method

Optimization of berth pipeline configuration in oil terminal   **Dalian University of Technology**
                                                                    Dec 2020 - Jan 2022

- Created a simulation model for the loading and unloading process of the oil terminal by considering

the navigation logic of ships in the waterway

- Designed a heuristic algorithm to optimize the pipeline configuration scheme aiming to reduce both the ship waiting time and construction cost under ship arrival uncertainty

Intelligent charging and dispatching system for new-energy buses   **Cardinal Operations**
Jan 2022 - Mar 2022 (Algorithm intern)

- Assisted to analyze customer demands, identified several business scenarios for cooperation
- Negotiated with partners on contract terms and evaluate the difficulty of algorithm implementation

PUBLICATIONS

- **Liu, S.**, Xu, X., Feng, T., Song, X., & Wang, W. (2021, October). A spline-LSTM for Autonomous Truck Trajectory Prediction Based on Curve feature extraction. In 2021 6th International Conference on Transportation Information and Safety (ICTIS) (pp. 1280-1285). IEEE. (**The Best Paper Reward**)
- Wang, W., Xu, X., Jiang, Y., Xu, Y., Cao, Z., & **Liu, S**. (2020). Integrated scheduling of intermodal transportation with seaborne arrival uncertainty and carbon emission. Transportation Research Part D: Transport and Environment, 88, 102571.

PAPER IN PROGRESS

- Refinery crude scheduling problem with long-distance pipeline
- Distributionally robust optimization for berth pipeline configuration in oil terminal considering ship navigation conflicts in waterway.
- Towards integrating massive multi-model data in container terminal: A knowledge graph-based data-governance approach

HONORS AND REWARDS

- 2021, The best paper reward in 6th ICTIS conference, Wuhan, China
- 2021, Special Award for recreational and sports activities, Dalian university of technology
- 2020, Excellent graduates, Dalian, China
- 2019, Excellent volunteers of Summer Davos Annual Meeting of New Champions, Dalian, China.
- 2018, Technological Innovation Award, Dalian University of Technology

ADDITIONAL

- English: CET6 535/710
- Computer skills: Python (**Software Design Engineer**), Matlab, Anylogic, Gurobi, Pytorch
- Hobbies: Music, sports