

Qi (Leo) Yu

Portfolio: yq-leo.github.io

Email: qiyu6@illinois.edu

LinkedIn: linkedin.com/in/qi-leo-yu/

EDUCATION

- **University of Illinois Urbana-Champaign** Champaign, U.S.
Master of Computer Science; GPA: 4.0/4.0 Aug. 2022 - May. 2024
Courses: Distributed Systems, Database Systems, Applied Parallel Programming, Manycore Parallel Algorithms, Machine Learning
- **Dalian University of Technology** Dalian, China
Bachelor of Engineering - Computer Science; GPA: 90.4/100, 4.04/5.0 Sept. 2018 - Jul. 2022
Courses: Computer Architecture, Numeric Methods, Operating Systems, Algorithms & Data Structures, Computer Networks, OOP
- **University of California, Los Angeles** Los Angeles, U.S.
Summer Session - Algorithm and Complexity; GPA: 4.0/4.0 Jun. 2020 - Sept. 2020

SKILLS SUMMARY

- **Languages:** Java, Python, C++, SQL, Go, HTML&CSS, JavaScript, PHP
- **Frameworks:** React, Node.js, Express.js, Bootstrap, CUDA, PyTorch, OpenCV, Z3-solver, Gurobi
- **Tools:** MySQL, Git, AWS, GCP, L^AT_EX

PROJECTS

- **Raft implementation in Go:** Implemented the basic functionality of the distributed consensus algorithm, Raft, in Go, including Leader Election and Log Consensus. Implementation passed the fault-tolerance tests under assorted network failures. **Tech:** Golang, Multi-threading, Distributed Algorithms (Mar. 2023)
- **ISIS algorithm implementation in Java:** Implemented the decentralized ISIS algorithm for ensuring total-order multicasting. Implementation passed robustness test under assorted network failures. **Tech:** Java, Socket API, Multi-threading, Distributed Algorithms (Feb. 2023)
- **RateMyRSOs - A review and rating website for RSOs at UIUC:** Built a full-stack web application, RateMyRSOs, which allows students at UIUC to post reviews and ratings to UIUC's different Registered Student Organizations (RSOs). Developed the backend and frontend of the application using Express.js and React. Database is hosted on GCP. **Tech:** React, Express.js, Node.js, MySQL, GCP (Jan. 2023, in progress)
- **Drug-drug Interaction Detection through Drug Knowledge Graph (Data Mining, Knowledge Graph, Graph Neural Network):** Constructed large-scale drug knowledge graph and proposed a DNN based on Conv-LSTM to predict drug-drug interaction with AUPR of 0.99 and MCC of 0.88. **Tech:** TensorFlow, PyTorch, PHP, SPARQL. (Mar. 2022)
- **Anomalous Behavior Detection under UAV Scenarios (Computer Vision, Deep Learning, Drone Platform):** Led a team of four to develop a deep-learning-based algorithm for detecting abnormal human behavior under an UAV perspective; Boosted model performance to 0.76 mAP and 0.85 mAR through a customized game-based dataset. **Tech:** PyTorch, OpenCV. (Feb. 2020)

EXPERIENCE

- **Research - Prioritized List Scheduling** Dalian University of Technology
Undergraduate Research Assistant Feb. 2022 - Jul. 2022
 - **IP:** Encoded priority assignment problem for a DAG task into an Integer Programming (IP) formulation.
 - **Gurobi - Python:** Designed an iterative algorithm to derive minimum WCRT using Python Gurobi solver.
 - **Result:** Proposed algorithm capable of solving IP formulation optimally by involving only 12.67% variables on average.
- **UCInspire Summer Research - Distributed Personalized ML** University of California, Irvine
Undergraduate Researcher Jun. 2021 - Oct. 2021
 - **Distributed ML:** Proposed a specialized machine learning schema for resource-constrained distributed systems by exploiting temporal correlations among data and enabling local training.
 - **Test on HAR:** Implemented a two-stage system in PyTorch for task-offloading and tested it on the HAR dataset.
 - **Result:** Proposed method improved resource utilization by 91% and reduced network communications by 84%.
- **Research - Static Job-shop Scheduling** Dalian University of Technology
Undergraduate Researcher Nov. 2020 - Jul. 2021
 - **JSP:** Formulated the static Job-Shop Scheduling Problem (JSP) into a programmable model in Factor Graph.
 - **Max-sum Algorithm:** Proposed and Implemented a derivative of the distributed max-sum algorithm in C++, which is commonly used for message passing through multi-agent systems, to iterate on the formulated Factor Graph model.
 - **Result:** Proposed algorithm capable of resolving large-scale JSPs in an industrial environment with a 3-time faster speed than that of state-of-the-art heuristic methods.

PUBLICATIONS

- **Journal:** Chang, S., Bi, R., Sun, J., Liu, W., Yu, Q., Deng, Q., & Gu, Z. (2022). Towards Minimum WCRT Bound for DAG Tasks under Prioritized List Scheduling Algorithms. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*.
- **Patent:** Qi Yu, Yuhan Wang, Jinghao Sun. 2021. A Distributed Max-Sum Algorithm for Job Shop Scheduling in an Industry 4.0 Environment, CN 202110789792.5.