

EDUCATION

• Carnegie Mellon University <i>PhD in Process Systems Engineering</i>	Pittsburgh, PA <i>Aug. 2018 – May. 2023</i>
• University of California, Davis <i>Master of Science in Mechanical Engineering</i>	Davis, CA <i>Aug. 2016 – July. 2018</i>
• Sharif University of Technology <i>Bachelor of Science in Chemical Engineering</i>	Tehran, Iran <i>Sep. 2012 – May. 2016</i>

EXPERIENCE

• Operations Research, Supply Chain Logistics <i>PhD Student</i> <ul style="list-style-type: none">• ML-assisted Vehicle Routing Under Uncertainty: Proposed a black-box routing simulation, derivative-free optimization (DFO) solver, and developing time series forecasting algorithm to generate new data points from historical customer orders data (C++, Python)• A Unified BPC Solver for Periodic Vehicle Routing: Developed a tailored branch-price-and-cut optimization solver to address several variants of periodic vehicle routing problems (multiple day trips, multiple depots, service choice, time windows, heterogeneous fleets). (C++, CPLEX, Gurobi)• Multi-day Periodic Vehicle Routing: Proposed a novel exact solution approach for a routing problem called "periodic vehicle routing with multiple day trips", which arises in the Linde PLC supply chain operations, for the first time in the literature. (C++, CPLEX, Gurobi)• Last-mile Delivery Policy Simulator: Established a last-mile delivery policy simulation framework with employing incorporating existing historical data for Linde PLC to evaluate the performance of new delivery paradigms (C++, CPLEX)	Pittsburgh, PA <i>Jan 2018 - Present</i>
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COURSEWORK PROJECTS

- **PyTorch-like Deep Learning Framework & NeuralODE:** Built a PyTorch-like deep learning framework from ground up, with backend support of CPU/GPU containing standard functionalities such as automatic differentiation, optimizers, data loaders, loss functions, and all required modules to employ parametrized layers (Python, C++, CUDA)
Designed and implemented a NeuralODE layer (operators and backends, ODE numerical solver, AD) within our Pytorch-like framework and demonstrated its capability of approximating ODE dynamics with NNs. (Python, C++, CUDA)
- **Large Datasets ML Pipelines:** Conducted various analyses such as entity resolution, and PCA along with building ML pipelines on large datasets such as Million Song Dataset, light-sheet imaging, and Criteo 1TB click logs dataset. (Python, AWS EC2, PySpark)
- **Model Compression:** Implemented multiple model compression techniques from scratch (network slimming, magnitude-based pruning). (Python, Tensorflow)
- **Quantum Programming:** Implemented a quantum computing MILP solver using [D-wave](#) quantum computer for job shop scheduling problem (Python)

PROGRAMMING SKILLS

Python, C++, CPLEX, Gurobi, GAMS, AWS(EC2, S3), CUDA, Tensorflow, PySpark

COURSEWORK

- **Computer Science & Machine Learning:** Advance Data Structure & Algorithms, Introduction to Machine Learning, Machine Learning with Large Datasets, Deep Learning Systems: Algorithms and Implementation, Machine Learning Production
- **Operations Research:** Linear/Integer/Quantum Integer/Convex programming,

PUBLICATION & PRESENTATION

- **A.Izadkhah**, A. Wang, J. Lainez, J. Pinto, and C. E. Gounaris. Periodic vehicle routing problem with trips spanning multiple days. In Preparation, 2022
- **A.Izadkhah**, A. Subramanyam, J. Lainez, J. Pinto, and C. E. Gounaris. Multi-period vehicle routing: Effect of customer flexibility in delivery day windows. Submitted, 2021
- **A.Izadkhah**, A. Subramanyam, and C. E. Gounaris. Multi-period vehicle routing: Effect of customer flexibility. INFORMS Transportation Science and Logistics Workshop, 2021
- **A.Izadkhah**, A. Wang, and C. E. Gounaris. A unified branch-price-and-cut framework for various classes of periodic vehicle routing problems. INFORMS Annual Meeting, 2020