

Changyu Gao

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EDUCATION

University of Wisconsin–Madison

Ph.D. Student in Industrial Engineering, Optimization Track

Madison, WI

Sep 2019 – Present

University of Wisconsin–Madison

M.S. Student in Computer Science

Madison, WI

Feb 2021 – Present

Relevant Coursework: Linear/Nonlinear/Integer Optimization, Database Systems, Machine Learning.

University of Science and Technology of China

B.S., Mathematics and Applied Mathematics (Outstanding Graduate)

Hefei, China

Aug 2015 – June 2019

Relevant Coursework: Algorithms, Multivariate Analysis, Time Series Analysis, Data Visualization.

EXPERIENCE

University of Wisconsin–Madison

Research Assistant, Supervisor: Stephen Wright

Madison, WI

Nov 2019 – Present

- **Parameter Learning with DFO methods:** Implemented the parameter learning procedure for Lorenz96 model using derivative-free optimization methods in Python. Performed optimization with uncertainty function values using soft interpolation and Bayesian methods.
- **Subseasonal Climate Forecasting:** Improved the parameter estimation with ensembles. Investigated the sensitivity of the dynamic systems. Implemented model reduction methods in Python.

University of Science and Technology of China

Research Assistant, Advisor: Liansheng Zhuang

Hefei, China

Mar 2019 – May 2019

- **Complex-valued Neural Network:** Surveyed various types of complex-valued neural networks. Implemented Associative LSTM in Keras. Validated the performance of the complex-valued neural network with experiments in Python.

University of British Columbia–Okanagan

Research Assistant, Advisor: Jeff Andrews

Kelowna, BC, Canada

July 2018 – Sep 2018

- **Overfitting problem in flexible model-based clustering:** Implemented the bootstrap sampling EM algorithm and ran simulations for testing in R. Alleviated the overfitting with bootstrap EM algorithm.

SELECTED PROJECTS

Distribution System Optimization: Modeling of two-stage optimization of the distribution system. Implemented in GAMS and Python. Data is collected and cleaned using BeautifulSoup and Pandas.

Knapsack Problem: Implemented various algorithms to solve the problem: depth first search, best first search and dynamic programming. Implemented branch and bound method to prune the search space.

Stock Info Visualization with Dash: Interactive visualization of stock historical information using Dash Framework. Wrote the data storage and update logic with callback functions.

PROGRAMMING SKILLS

Languages: Python, SQL, MATLAB, R, C, C++, Java

Frameworks: Tensorflow, Pytorch, Pandas, Numpy, Scipy