

Changyu Gao

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EDUCATION

University of Wisconsin–Madison Madison, WI
Ph.D. Student in Industrial Engineering, Optimization Track Sep 2019 – Present

University of Wisconsin–Madison Madison, WI
M.S. Student in Computer Science Feb 2021 – Present
Relevant Coursework: Linear/Nonlinear/Integer Optimization, Database Systems, Machine Learning.

University of Science and Technology of China Hefei, China
B.S., Mathematics and Applied Mathematics (Outstanding Graduate) Aug 2015 – June 2019
Relevant Coursework: Algorithms, Multivariate Analysis, Time Series Analysis, Data Visualization.

EXPERIENCE

University of Wisconsin–Madison Madison, WI
Research Assistant, Supervisor: Stephen Wright 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 Hefei, China
Research Assistant, Advisor: Liansheng Zhuang 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 Kelowna, BC, Canada
Research Assistant, Advisor: Jeff Andrews 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