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*

University of Science and Technology of China — Hefei, China
B.S., Mathematics and Applied Mathematics (Outstanding Graduate) — *Aug 2015 – June 2019*

Experience

Research Assistant, University of Wisconsin–Madison — Madison, WI
Supervisor: **Stephen Wright** — *Nov 2019 – Present*

- **Differentially Private Optimization**: Designed a differentially private optimization algorithm for finding an approximate second-order stationary point with convergence guarantees. Applied the algorithm to the empirical risk minimization problem with adaptive mini-batching.
- **Optimization Methods for Probabilistic Soft Logic (PSL)**: Implemented and tested HOGWILD! and Frank-Wolfe methods for PSL framework. Carried out inference experiments on real datasets.
- **Parameter Learning with Derivative-Free Optimization (DFO) Methods**: Implemented the parameter learning procedure for Lorenz96 model using DFO methods in Python. Performed optimization with uncertainty function values using soft interpolation and Bayesian methods.

Applied Scientist Intern, Amazon — Seattle, WA
Team: **Delivery Experience (DEX) – AI** — *May 2021 – Aug 2021*

- **Mining Inconsistency Issues using Semantic Search Model**:
  - Applied the semantic search model to the customer contact data, facilitating inconsistency detection.
  - Collected and refined the queries for semantic search; oversaw the data annotation process.
  - Implemented two fine-tuning schemes of the encoder used in the semantic search model in Tensorflow and thus improved the search model accuracy.
  - Important inconsistency issues discovered were escalated to the corresponding issue owners.

Research Assistant, University of Science and Technology of China — Hefei, China
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 its performance with experiments.

Programming Skills

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

Frameworks: Tensorflow, Pytorch, Pandas, Numpy, Scipy