

# Changyu Gao

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## EDUCATION

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<b>University of Wisconsin–Madison</b> <i>Ph.D. Student in Industrial Engineering, Optimization Track</i>	Madison, WI <i>Sep 2019 – Present</i>
<b>University of Wisconsin–Madison</b> <i>M.S. Student in Computer Science</i>	Madison, WI <i>Feb 2021 – Present</i>
<b>University of Science and Technology of China</b> <i>B.S., Mathematics and Applied Mathematics (Outstanding Graduate)</i>	Hefei, China <i>Aug 2015 – June 2019</i>

## EXPERIENCE

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<b>Research Assistant, University of Wisconsin–Madison</b> <i>Supervisor: Stephen Wright</i>	Madison, WI <i>Nov 2019 – Present</i>
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- **Differentially Private Optimization:** Designed a simple differentially private optimization algorithm for finding an approximate second-order stationary point with convergence guarantees.
- **Probabilistic Soft Logic:** Implemented and tested HOGWILD! and Frank-Wolfe methods in Java. Conducted inference experiments on several datasets.
- **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.

<b>Applied Scientist Intern, Amazon</b> <i>Team: Delivery Experience (DEX) – AI</i>	Seattle, WA <i>May 2021 – Aug 2021</i>
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- **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.

<b>Research Assistant, University of Science and Technology of China</b> <i>Advisor: Liansheng Zhuang</i>	Hefei, China <i>Mar 2019 – May 2019</i>
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- **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.

## PROGRAMMING SKILLS

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

**Frameworks:** Tensorflow, Pytorch, Pandas, Numpy, Scipy