# Yue GUO

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## EDUCATION

**PhD in Mathematics** *National University of Singapore, Singapore* *2021 - Present*
Supervisor: Qianxiao Li *https://blog.nus.edu.sg/qianxiaoli*

**MSc in Mathematics** *National University of Singapore, Singapore* *2019 - 2020*

**BSc in Pure and Applied Mathematics** *Jilin University, China* *2015 - 2019*

## EXPERIENCE

**Data Science Intern** *Global Decision Science, American Express, Singapore* *May - Jul 2025*

- Analyzed fraud data and identified patterns using SQL and PySpark. Developed XGBoost models and engineered new features for POS fraud detection on Google Cloud Platform.

**Research Assistant** *Department of Mathematics, National University of Singapore, Singapore* *2020 - 2021*

- Developed and maintained codebase for OnsagerNet using TensorFlow 2, integrating model reduction techniques. Built weather forecasting models and evaluated against baselines.

## PROJECTS

**Learning-Based ODE Solver** *TensorFlow 2* *2021 - 2022*

- Developed a machine learning-based ordinary differential equation solver (Runge-Kutta scheme) that outperforms classical methods in accuracy.

**Parametric Koopman Decomposition** *TensorFlow 2, PyTorch* *2022 - 2024*

- Implemented Koopman-type decompositions for dynamic systems with static or time-varying parameters and achieved improvements on forward predictions control problems for high-dimensional, non-linear systems.

## PUBLICATIONS

**Learning Parametric Koopman Decompositions for Prediction and Control.** *SIAM Journal on Applied Dynamical Systems. https://doi.org/10.1137/23M1604576.*

**A Recursively Recurrent Neural Network (R2N2) Architecture for Learning Iterative Algorithms.** *SIAM Journal on Scientific Computing. https://doi.org/10.1137/22M1535310.*

**Personalized Algorithm Generation: A Case Study in Learning ODE Integrators.** *SIAM Journal on Scientific Computing. https://doi.org/10.1137/21M1418629.*

## TALKS & PRESENTATIONS

**The 14th AIMS Conference** *hosted by the American Institute of Mathematical Sciences and NYU Abu Dhabi, Abu Dhabi, United Arab Emirates* *Dec 2025*

**The 13th SIAM Student Chapter Symposium** *National University of Singapore, Singapore* *May 2024*

**SINFRA workshop 2023** *hosted by the international IPAL laboratory (CNRS, NUS, A*STAR, Univ Toulouse 3, Toulouse INP, CYU), Toulouse, France* *Jun 2023*

## SKILLS

**Programming & Tools:** Python (PyTorch, TensorFlow 2, PySpark, Pandas, Scikit-learn, etc.), Matlab, SQL, Git, Google Cloud Platform (Cloud Storage, BigQuery)
**Expertise:** Deep Learning, Dynamics, Fraud detection **Languages:** Mandarin (native), English (professional)

## AWARDS

**First Place, Citadel APAC Datathon** *Mathematical modelling for traffice police resource allocation* *Apr 2023*

**NRF Research Scholarship** *National University of Singapore, Singapore* *Aug 2021 - Aug 2025*

*Last updated: Sept 2025*