

# Yue GUO

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## EDUCATION

<b>PhD in Mathematics</b>	<i>National University of Singapore, Singapore</i>	<i>2021 - Present</i>
Supervisor: Qianxiao Li <a href="https://blog.nus.edu.sg/qianxiaoli">https://blog.nus.edu.sg/qianxiaoli</a>		
<b>MSc in Mathematics</b>	<i>National University of Singapore, Singapore</i>	<i>2019 - 2020</i>
<b>BSc in Pure and Applied Mathematics</b>	<i>Jilin University, China</i>	<i>2015 - 2019</i>

## EXPERIENCE

<b>Data Science Intern</b>	<i>Global Decision Science, American Express, Singapore</i>	<i>May - Jul 2025</i>
<ul style="list-style-type: none"><li>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.</li></ul>		
<b>Research Assistant</b>	<i>Department of Mathematics, National University of Singapore, Singapore</i>	<i>2020 - 2021</i>
<ul style="list-style-type: none"><li>Developed and maintained codebase for OnsagerNet using TensorFlow 2, integrating model reduction techniques. Built weather forecasting models and evaluated against baselines.</li></ul>		

## PROJECTS

<b>Learning-Based ODE Solver</b>	<i>TensorFlow 2</i>	<i>2021 - 2022</i>
<ul style="list-style-type: none"><li>Developed a machine learning-based ordinary differential equation solver (Runge-Kutta scheme) that outperforms classical methods in accuracy.</li></ul>		
<b>Parametric Koopman Decomposition</b>	<i>TensorFlow 2, PyTorch</i>	<i>2022 - 2024</i>
<ul style="list-style-type: none"><li>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.</li></ul>		

## PUBLICATIONS

<b>Learning Parametric Koopman Decompositions for Prediction and Control.</b>		<i>SIAM Journal on Applied Dynamical Systems.</i>
		<a href="https://doi.org/10.1137/23M1604576">https://doi.org/10.1137/23M1604576</a> .
<b>A Recursively Recurrent Neural Network (R2N2) Architecture for Learning Iterative Algorithms.</b>		<i>SIAM Journal on Scientific Computing.</i>
		<a href="https://doi.org/10.1137/22M1535310">https://doi.org/10.1137/22M1535310</a> .
<b>Personalized Algorithm Generation: A Case Study in Learning ODE Integrators.</b>		<i>SIAM Journal on Scientific Computing.</i>
		<a href="https://doi.org/10.1137/21M1418629">https://doi.org/10.1137/21M1418629</a> .

## TALKS & PRESENTATIONS

<b>The 14th AIMS Conference</b>	<i>hosted by the American Institute of Mathematical Sciences and NYU Abu Dhabi, Abu Dhabi, United Arab Emirates</i>	<i>Dec 2025</i>
<b>The 13th SIAM Student Chapter Symposium</b>	<i>National University of Singapore, Singapore</i>	<i>May 2024</i>
<b>SINFRA workshop 2023</b>	<i>hosted by the international IPAL laboratory (CNRS, NUS, A*STAR, Univ Toulouse 3, Toulouse INP, CYU), Toulouse, France</i>	<i>Jun 2023</i>

## 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

<b>First Place, Citadel APAC Datathon</b>	<i>Mathematical modelling for traffice police resource allocation</i>	<i>Apr 2023</i>
<b>NRF Research Scholarship</b>	<i>National University of Singapore, Singapore</i>	<i>Aug 2021 - Aug 2025</i>