

# Yilin Li

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## EDUCATION

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### School of Mathematical Sciences, Nankai University

Nankai District, Tianjin

*Bachelor's of Science, Mathematics*

Sep 2021 — Jun 2025

- **Favorite courses:** Data Mining(93), Operating System and Network(91), GPU Programming(90), Signal and Systems(90), Data Structure and Algorithms(94), Mathematical Modeling(92), Stochastic Operation Research(87), Numerical Approximating (91), Numerical PDEs(85), Functional Analysis(87), Differentiable Manifolds(86), Dynamical Systems(85)

## COMPETENCES

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- **Programming Languages:** Python(PyTorch, Pandas), C++/NVCC, MATLAB, Linux
- **Mathematics:** Numerical PDEs, Optimization, Functional Analysis

## LANGUAGE PROFICIENCY

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- **English (TOEFL):** Reading: 29, Listening: 29, Speaking: 22, Writing: 22

## RESEARCH INTEREST

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- Data Analysis, Machine Learning, High Performance Computing/ML Systems, Federated Learning
- Bioinformatics/Biostats, AI for Med, Applied Math

## RESEARCH EXPERIENCE

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### Research with Associate Professor Wenrui Hao(Penn State University), Neural Network Modeling of Alzheimer's Disease Dynamics

Jan 2025 — Current

- Neural ODE modeling for Alzheimer's Disease biomarkers
- Transfer learning and sensitivity analysis for constructing personalized models
- Uncertainty Quantification, Parameters clustering and AD stage identification

### Research Intern at HKUST(GZ) with Assistant Professor Zecheng Gan, Tensor Neural Networks and Acceleration Algorithms

Fen 2025 - June 2025

- Developing Tensor Neural Networks to solve high-dimensional partial differential equations (PDEs)
- Mathematically derive algorithms for Convolutional Tensor Neural Networks(CTNNs) with coupled input dimensions
- Applying Deep Galerkin/Ritz Methods for Numerical PDEs
- Profiling and Accelerating training process

### Research Assistant at HKUST(GZ) with Dr.Cuiping Pan's group, ODE Models for Autoimmune and Cardiovascular Diseases and In-silico Perturbation for Drug Discovery

Oct 2025 — Current

- Developing ODE Models for IgG4-RD and coronary heart disease
- In-silico perturbation for therapy and drug effect simulation

### Research with Dr. Ziyang Song(University of Ohio) and Prof. Yue Li(McGill University), scTimelyGPT: Extrapolatable Transformer Pre-training for Single-cell Transcriptomics Time-Series Forecasting and Foundation Model

Oct 2025 — Current

- Developing TimelyGPT Models and conducting experiments for Single-Cell Transcriptomics time series data interpolation and extrapolation
- Comparing scTimelyGPT model with generative models such as scNODE

## PROJECTS

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### Open-Problems---Multimodal-Single-Cell-Integration

2025

- Feature Engineering
- Building high-dimensional regression and prediction models
- [Github Repository](#)

## **HONORS AND AWARDS**

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S Prize in Mathematical Contest in Modeling (MCM) 2024, COMAP	2024
Outstanding Student Union Cadre	Sep 2023
First Class High School Scholarship	Feb 2021
Outstanding Teenager in Beilin District	Jun 2019

## **SOCIAL RESPONSIBILITY AND LEADERSHIP**

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Administrative assistant at the Department of Physical Education, Nankai University	Sept 2023 - Jan 2025
Student cadre at the School of Mathematical Sciences, Nankai University	Sept 2021 - Aug 2024
Social worker(volunteer) at Zhangwanying Subdistrict Office	Feb 2024
Extracurricular activity mentor(volunteer) at Nankai University Affiliated Primary School	Feb 2024