

# Chenyu Li

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## EDUCATION

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### Bachelor in Software Engineering

August 2021 - June 2025(expected)

School of Software, Tsinghua University

GPA:3.89/4.00. Major GPA: 3.93/4.00

Core Courses: Introduction to Artificial Intelligence(A+), Students Research Training(A+), University Physics(A+), Physics for Scientists and Engineers(A), Probability and Statistics(A), Calculus(A), Linear Algebra(A), Practice of Programming(A)

## RESEARCH INTERESTS

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Time Series analysis and generative AI (e.g. diffusion models and state space models)

## PUBLICATIONS

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### Koopa: Learning Non-stationary Time Series Dynamics with Koopman Predictors

Yong Liu\*, **Chenyu Li\***, Jianmin Wang, Mingsheng Long. *NeurIPS 2023*

## RESEARCH EXPERIENCES

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### Learning Non-stationary Time Series Dynamics with Koopman Predictors

Oct.2022 - Oct.2023

Advisor: **Mingsheng Long**, Associate Professor, School of Software, Tsinghua University

- Proposed **Koopa** as novel **Koopman** forecaster for non-stationary time series forecasting based on modern Koopman theory.
- Devised the stackable structure of Koopa composed of modular *Fourier Filter* and *Koopman Predictor*, which can hierarchically disentangle and exploit time-invariant and time-variant dynamics for time series forecasting.
- Conducted experiment in six real-world benchmarks and demonstrated a competitive performance with state-of-the-art model while saving **77.3%** average training time and **76.0%** average memory usage.
- Accepted by *NeurIPS 2023*.

### Apache IoTDB Artificial Intelligence Node

Jan 2023 - Present

Advisor: **Mingsheng Long**, Associate Professor, School of Software, Tsinghua University

- Participated in the development of IoTDB Artificial Intelligence Node, a native machine learning engine integrated into Apache IoTDB. Users build, train, manage and use machine learning models in IoTDB databases using SQL statements.
- Designed and implemented storage module and inference module(**core modules in Artificial Intelligence Node**), a unified inference framework which supports user-defined models(imported from local directory or huggingface) and built-in models for inference.
- Artificial Intelligence Node **has been released** at the IoTDB User Conference in December 2023 and **has been applied** in industrial production.

### Scalable Learning for Large Time Series Models

Aug.2023 - Present

Advisor: **Mingsheng Long**, Associate Professor, School of Software, Tsinghua University

- Endeavored to develop **the first time series foundation model**, capable of forecasting, classification, imputation and other downstream tasks.
- Built **the largest time series dataset**, covering different domains and different sampling frequencies.
- Designed a model based on VQVAE and employed two-stage training approach.
- Conducted experiment in large-scale datasets and achieved promising results in the first stage of training.

## HONORS AND AWARDS

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SenseTime AI Scholarship(30 undergraduates domestically), SenseTime	2023
Huawei Scholarship(top 5%), Tsinghua University	2023
Software Innovation Competition(1st place), Tsinghua University	2023
12·9 Scholarship(Top scholarship; 1 student per department), Tsinghua University	2022
National College Students Physics Competition(Second prize), Beijing Physical Society	2021

SKILLS

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Programming Languages	Python, C/C++, Java, Javascript
Professional Software	Pytorch, NumPy, Pandas, Git, LaTeX
Language	Chinese(native), English(TOEFL iBT 107)