Chenyu Li

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EDUCATION

Bachelor in Software Engineering August 2021 - June 2025(expected)
School of Software, Tsinghua University
GPA:3.90/4.00
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

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

PUBLICATIONS

Koopa: Learning Non-stationary Time Series Dynamics with Koopman Predictors
Yong Liu*, **Chenyu Li***, Jianmin Wang, Mingsheng Long. *NeurIPS 2023*
Timer: Transformers for Time Series Analysis at Scale
Yong Liu*, Haoran Zhang*, **Chenyu Li***, Xiangdong Huang,Jianmin Wang, Mingsheng Long. *Under Review*

RESEARCH EXPERIENCES

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 **Koop**man forec**a**ster 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%** arverage 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 Transformer and employed two-stage training approach.
- Conducted experiment in large-scale datasets and achieved promising results.

HONORS AND AWARDS

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), Bejing Physical Society 2021

SKILLS

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