# Naoki Chihara

Curriculum Vitæ Summary


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| **Address** | Mihogaoka 8-1, Ibaraki, Osaka 567-0047, Japan |
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| **University** | www.osaka-u.ac.jp |
| **Laboratory** | www.dm.sanken.osaka-u.ac.jp |
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| **Last Updated Date** | February 19, 2025 |


## About me

I am Naoki Chihara, a second-year M.Sc. student at Osaka University, Japan, and a specially appointed researcher at SANKEN (The Institute of Scientific and Industrial Research at Osaka University). My research mainly focuses on data stream mining and causal discovery in time series [C1]. I am fortunate to be advised by Prof. Yasushi Sakurai and Prof. Yasuko Matsubara. I received my B.Sc. degree from Osaka University advised by Prof. Makoto Onizuka in March 2023.

**Research interests**: Time series analysis, Data mining, Stream processing, Causal discovery, Koopman operator

**Links**: Linkedin / Google Scholar / GitHub / ORCID / Twitter

## Education

**M.Sc. in Information Science**, Osaka University — 2023–2025
Department of Information Systems Engineering, Graduate School of Information Science and Technology — Osaka, Japan

- Thesis: Stream Mining Time-evolving Causality for Time Series Forecasting
- Supervisor: Prof. Yasushi Sakurai

**B.Sc. in Engineering**, Osaka University — 2019–2023
Department of Electronic and Information Engineering, School of Engineering — Osaka, Japan

- Thesis: Detection of Variable Celestial Objects using Machine Learning-based Periodic Analysis and Domain Knowledge
- Supervisor: Prof. Makoto Onizuka

## Experience

**SANKEN**, Osaka University — 2023–present
Specially Appointed Researcher — Osaka, Japan

**School of Engineering**, Osaka University — 2023
Teaching Assistant for “Exercises in Mathematical Analysis” — Osaka, Japan

**Graduate School of Information Science and Technology**, Osaka University — 2021–2023
Teaching Assistant — Osaka, Japan

**Nagase Co., Ltd.** — 2020–2023
Digital Technology Engineer — Tokyo, Japan

## Grants and Awards

**Information Processing Society of Japan (IPSJ) Yamashita SIG Research Award** — July 2024

DEIM2024 Best Paper Award Runner-up — June 2024

Osaka University Humanware Innovation Program Scholarship — 2023-present

## Publications

### Peer-reviewed Publications

[C1] Naoki Chihara, Yasuko Matsubara, Ren Fujiwara, and Yasushi Sakurai. **Modeling Time-evolving Causality over Data Streams**. Proceedings of the 31st ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD '25**), Toronto, ON, Canada, August 3-7, 2025. Acceptance rate: 19%.
code: C-Naoki/ModePlait | doi: 10.1145/3690624.3709283 (to appear)

[W1] Naoki Chihara, Yasuko Matsubara, Ren Fujiwara, and Yasushi Sakurai. **Stream Mining Time-evolving Causality in Time Series**. The 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD '24) PhD Consortium, Barcelona, Spain, August 25-29, 2024.
url: kdd2024.kdd.org/ph-d-consortium/

[J2] Naoki Chihara, Yasuko Matsubara, Ren Fujiwara, and Yasushi Sakurai. **Real-time Forecasting of Time-evolving Data Streams using Dynamic Mode Decomposition**. IPSJ Transactions on Databases (TOD), Vol. 17, No. 2, pp. 1-11, April 23, 2024.
url: ipsj.ixsq.nii.ac.jp/records/233825

[J1] Naoki Chihara, Tadafumi Takata, Yasuhiro Fujiwara, Koki Noda, Keisuke Toyoda, Kaito Higuchi, and Makoto Onizuka. **Effective detection of variable celestial objects using machine learning-based periodic analysis**. Astronomy and Computing, Vol. 45, pp. 100765, November 3, 2023.
doi: 10.1016/j.ascom.2023.100765

### Non-refereed Publications

[N3] Naoki Chihara, Yasuko Matsubara, Ren Fujiwara, and Yasushi Sakurai. **動的モード分解を活用した高速将来予測アルゴリズム**. The 16th Forum on Data Engineering and Information Management (DEIM2024), Hyogo, Japan, February 28 - March 5, 2024.
**Best Paper Award Runner-up, IPSJ Yamashita SIG Research Award.**

[N2] Aiyi Li, Kenya Hoshimure, Kei Tanigaki, Yota Hatano, Reina Nozawa, Yuki Sakamoto, Yuanzhou Wei, Naoki Chihara, and Naoki Kodani. **Semi-autonomous Leader-follower Approach for Swarm Drone Guidance**. The 36th SICE Symposium on Decentralized Autonomous Systems, Tokyo, Japan, February 16-17, 2024.

[N1] Naoki Chihara, Tadafumi Takata, Yasuhiro Fujiwara, and Makoto Onizuka. **周期解析による変動天体の検出**. The 15th Forum on Data Engineering and Information Management (DEIM2023), Gifu, Japan, March 5-9, 2023.

### Patents

[P1] Yasuhiro Fujiwara, Makoto Onizuka, and Naoki Chihara. **検出装置、検出方法及びプログラム**. 特開 2025-000129, January 7, 2025.
url: jglobal.jst.go.jp/detail?JGLOBAL_ID=202503009056531197

## Academic Services

Conference Volunteer Work in PAKDD 2023 May 2024

**External Reviewers**

- ACM Web Conference 2025