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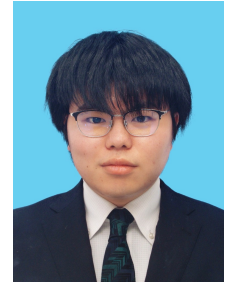
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About me

I am Naoki Chihara, a first-year Ph.D. student at The University of Osaka, Japan, and a specially appointed researcher at SANKEN (The Institute of Scientific and Industrial Research at The University of Osaka). My research mainly focuses on data stream mining [C1, C2] and causal discovery in time series [C1]. I am fortunate to be advised by [Prof. Yasushi Sakurai](#) and [Prof. Yasuko Matsubara](#) at SANKEN. I received my B.Sc. and M.Sc. degrees from The University of Osaka advised by [Prof. Makoto Onizuka](#) and [Prof. Yasushi Sakurai](#) in March 2023 and 2025, respectively.

Keywords: [Time series analysis](#), Data mining, [Stream processing](#), [Causality](#), Koopman operator theory, Missingness mechanisms, Time series forecasting, [Bayesian optimization](#)

Links: [in LinkedIn](#) | [Google Scholar](#) | [GitHub](#) | [ORCID](#) | [Twitter](#) | [DBLP](#)

Education

- Ph.D. in Information Science**, The University of Osaka 2025–present
Department of Information Systems Engineering, Graduate School of Information Science and Technology Osaka, Japan
- Expected graduation date is March 2028
 - Supervisor: Prof. Yasushi Sakurai
- M.Sc. in Information Science**, The University of Osaka 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**, The University of Osaka 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







- Japan Society for the Promotion of Science (JSPS)** 2025–present
Research Fellow DC1 Osaka, Japan
- SANKEN, The University of Osaka** 2023–present
Specially Appointed Researcher Osaka, Japan
- School of Engineering, The University of Osaka** 2023
Teaching Assistant for “Exercises in Mathematical Analysis” Osaka, Japan
- Graduate School of Information Science and Technology, The University of Osaka** 2021–2023
Assistant in the detection of variable celestial objects Osaka, Japan
- Nagase Co., Ltd.** 2020–2023
Digital Technology Engineer Tokyo, Japan

Awards

- Award of the Graduate School of Information Science and Technology of Osaka University Mar 2025

Publications

Peer-reviewed Publications

- [C2] [Naoki Chihara](#), Ren Fujiwara, Yasuko Matsubara, and Yasushi Sakurai. **CANMI: Causal Discovery under Nonstationary Missingness Mechanisms**. (Under submission to NeurIPS).
- [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%.  DOI: [10.1145/3690624.3709283](https://doi.org/10.1145/3690624.3709283).
 [C-Naoki/ModePlait](#) |  [01hS6R1a8jg](#)
- [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](https://doi.org/10.1016/j.ascom.2023.100765).

Non-refereed Publications

- [N4] [Naoki Chihara](#), Yasuko Matsubara, Ren Fujiwara, and Yasushi Sakurai. **時間変化する因果関係の抽出に基づいた高速将来予測**. The 17th Forum on Data Engineering and Information Management (DEIM2025), Fukuoka, Japan, February 27 - March 4, 2025.
Student Presentation Award.
- [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

External Reviewers

- ACM WWW 2025
- ACM SIGKDD 2025

Conference Volunteer Work

- PAKDD 2023