

Jun Yamamoto

PhD Candidate, Department of Network and Data Science, Central European University, Vienna, Austria
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EDUCATION

Central European University, Vienna, Austria Sep. 2023 — Present
Doctor of Philosophy in Network Science GPA: 4.00/4.00
Thesis Title: “*Toward a general theory for physical networks dynamics*” (tentative)
Supervisor: Prof. Dr. Márton Pósfai

Queen Mary University of London, London, United Kingdom Sep. 2022 — Sep. 2023
Master of Science in Mathematics Mark: Distinction
Thesis Title: “*Modelling Higher-Order Network Dynamics in the Presence of Triadic Interactions*”
Supervisor: Prof. Dr. Ginestra Bianconi

Hokkaido University, Sapporo, Japan Apr. 2017 — Mar. 2022
Bachelor of Engineering in Applied Science and Engineering GPA: 4.18/4.30
Thesis Title: “*Bifractality of Fractal Scale-Free Networks*”
Supervisor: Prof. Dr. Kousuke Yakubo

EXPERIENCE

Fujitsu, DX Large Data Platform Business Group Tokyo, Japan
Data Scientist Jul 2022 — Sep 2022

- Analysed large-scale datasets of newspaper articles using natural language processing and network analysis.
- Quantified the trends of markets by employing the dynamic topic model and developed software that visualises the correlation between the trending topics/keywords and economic indices.
- Analysed the topology of collocation networks of keywords in the news articles and bipartite networks of keywords and newspaper articles.
- Developed a portfolio in which the collocation networks are visualised and used to recommend related news articles or keywords.

INTERNSHIP

Japan Atomic Energy Agency Kashiwa, Japan
Summer Research Intern Jul 2020 — Aug 2020

- Implement the self-learning hybrid Monte Carlo method to accelerate molecular dynamics.
- Simulate titanium dioxide using the self-learning hybrid Monte Carlo method to validate the method.

Okinawa Institute of Science and Technology Onna, Japan
Research Intern Feb 2018 — Mar 2018

- Operate scanning electron microscope (SEM), environmental transmission electron microscope (ETEM), and focused ion beam (FIB).
- Construct a vacuum system and test cold field emitters in the system.
- Prepare samples of gold particles and carbon nanotubes for experiments.

TEACHING

Teaching Assistantship

Central European University

- **Scientific Python**, Department of Network and Data Science Fall AY2025/26
- **Introduction to Linear Algebra**, Undergraduate Program Winter AY2024/25

Hokkaido University

- **Statistical Mechanics I**, School of Engineering Spring AY2022/23
- **Applied Mathematics II**, School of Engineering Spring AY2022/23
- **Computational Science**, Spring AY2022/23
Education and Research Centre for Mathematics and Data Sciences Fall AY2021/22
- **Introduction to Statistics** (As a part of Mathematics and Data Science/AI Seminar Series), Spring AY2021/2022
Education and Research Centre for Mathematics and Data Sciences

AWARD & SCHOLARSHIP

First-Year PhD Award, Central European University Vienna, Austria
 Awarded for outstanding coursework and performance during the comprehensive exam. Feb. 2025

Principal's Prize, Queen Mary University of London London, United Kingdom
 Awarded for outstanding academic achievements during MSc studies. Nov. 2023

ITO Scholarship Award for Japanese Students, Tokyo, Japan
 ITO Foundation for International Education Exchange Sep. 2022 — Sep. 2023
 Awarded ¥3,000,000 tuition fee & \$2,000/month stipend for Japanese students studying master's degree abroad.

Dean's Award for Academic Achievement, School of Engineering, Hokkaido University Sapporo, Japan
 Awarded to students with outstanding academic achievements at the School of Engineering. Mar. 2022

Lane Memorial Award, Hokkaido University Sapporo, Japan
 Awarded to the eight students with outstanding grades in English in the first and second years of undergraduate studies. Jul. 2019

Scholarship for Study Abroad under Agreement, Japan Student Service Organization Tokyo, Japan
 Awarded ¥80,000/month for the duration of the exchange programme. Sep. 2019 — May 2020

Nitobe Award, Hokkaido University Sapporo, Japan
 Awarded to the best student at each school by GPA of the first year. Jul. 2018

PUBLICATION

1. **J. Yamamoto**, I. Bonamassa, & M. Pósfai “Localization-delocalization transition in physical networks.” In preparation.
2. M. Niedostatek, A. Baptista, **J. Yamamoto**, J. Kurths, R. Sanchez Garcia, B. MacArthur, and G. Bianconi “Mining higher-order triadic interactions.” arXiv preprint arXiv:2404.14997. DOI: 10.48550/arXiv.2404.14997. To appear in Nature Communications.
3. K. Yakubo, G. Shimojo, & **J. Yamamoto** “Random walks on bifractal networks.” Physical Review E 110, 064318 (2024). DOI: 10.1103/PhysRevE.110.064318.
4. **J. Yamamoto** & K. Yakubo “Bifractality of fractal scale-free networks.” Physical Review E 108, 024302 (2023). DOI: 10.1103/PhysRevE.108.024302.

PRESENTATION

ORAL

*Presenter is underlined.

1. S. Mizutaka, **J. Yamamoto**, and K. Yakubo “Long-range degree correlations and fractal property of random networks.” The Physical Society of Japan 80th Annual Meeting, September 16, 2025 (Hiroshima, Japan).
2. **J. Yamamoto**, I. Bonamassa, and M. Pósfai “Localization-delocalization transition in physical networks.” The 29th International Conference on Statistical Physics (StatPhys29; Florence), July 14, 2025.
3. **J. Yamamoto**, I. Bonamassa, and M. Pósfai “Delocalization of Physical Laplacian Eigenvectors due to Degree-Volume Correlation.” The International School and Conference on Network Science (NetSci2025; Maastricht), June 4, 2025.
4. M. Niedostatek, A. Baptista, **J. Yamamoto**, B. MacArthur, J. Kurths, R. Sanchez-Garcia, G. Bianconi “Mining higher-order triadic interactions in gene-expression data” The International School and Conference on Network Science (NetSci2025; Maastricht), June 4, 2025.
5. **J. Yamamoto**, I. Bonamassa, and M. Pósfai “Reentrant localization in physical Laplacian eigenvectors” DYNASNET workshop on graphs, networks, and brains, May 13, 2025 (Budapest, Hungary).
6. **J. Yamamoto**, I. Bonamassa, and M. Pósfai “Laplacian Spectra and Angular Constraints in Physical Networks” Annual DYNASNET Meeting, October 16, 2024 (Valtice, Czech).
7. G. Shimojo, **J. Yamamoto**, and K. Yakubo “Anomalous diffusion with two spectral dimensions on a fractal scale-free network” The Physical Society of Japan 79th Annual Meeting, September 16, 2023 (Tohoku, Japan).
8. **J. Yamamoto** and K. Yakubo “Bifractal property of stochastic scale-free networks,” The Physical Society of Japan 77th Annual Meeting, March 15, 2022 (Online).
9. **J. Yamamoto** and K. Yakubo “The multifractality of scale-free networks,” The Physical Society of Japan 76th Annual Meeting, September 20, 2021 (Online).

POSTER

1. K. Yakubo and **J. Yamamoto**. “Bifractal property of scale-free networks,” The International School and Conference on Network Science (NetSci2024; Québec), June 15–21, 2024.
2. **J. Yamamoto**, G. Shimojo, and K. Yakubo “Bifractal nature of fractal scale-free networks and its implications,” Network Science Seminar 2022 (Kyoto), August 23–25, 2022.
3. **J. Yamamoto** and K. Yakubo “Bifractality of scale-free networks,” Network Science Seminar 2021 (Kanawaza), December 11–12, 2021. *Poster Award*.

ACADEMIC SERVICE

Review Activity

- **Nature Communications** Since 2025.
- **Transactions of the Japanese Society for Artificial Intelligence** Since 2025.

Organization

- **Organizer, Physical Networks III Satellite** Dec. 2024 — Jun. 2025
The International School and Conference on Network Science (NetSci2025) Maastricht, Netherland
- **Organizer, Data Stories 11th Edition** Nov. 2024 — May 2025
Department of Network and Data Science, Central European University Vienna, Austria

WORKSHOP & SCHOOL

- **IceLab Camp** (Umeå, Sweden) 23 — 26 Sep 2025
- **Workshop on Graphs, Networks, and Brains** (Budapest, Hungary) 12 — 13 May 2025
- **Winter Workshop on Complex Systems** (Lambordy, Italy) 26 — 31 Jan 2025
- **Annual DYNASNET Meeting 2024** (Valtice, Czech) 14 — 18 Oct 2024

MEMBERSHIP

- **The Physical Society of Japan** Since Nov 2020.
- **Austrian Physical Society** Since Mar 2024.

SKILL

- **Language:** Japanese (native); English (fluent); German (beginner)
- **Programming:** Python; C++; Julia; Fortran
- **Software:** Linux; Git; L^AT_EX; Mathematica