

## Jun Yamamoto

PhD Candidate, Department of Network and Data Science, Central European University, Vienna, Austria  
jun.j.yamamoto@gmail.com — ORCID:0009-0009-5089-3269 — jym16.github.io

## EDUCATION

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

**Queen Mary University of London**, *School of Mathematical Sciences* Sep. 2022 — Sep. 2023  
MSc in Mathematics Mark: Distinction  
Supervisor: Prof. Dr. Ginestra Bianconi  
Thesis: “Modelling higher-order network dynamics in the presence of triadic interactions”

**ETH Zürich**, *Department of Physics* Sep. 2019 — May 2020  
Exchange Semesters Abroad (Terminated early due to the COVID-19 pandemics)

**Hokkaido University**, *Department of Applied Physics* Apr. 2017 — Mar. 2022  
Bachelor of Engineering in Applied Science and Engineering GPA: 4.18/4.30  
Supervisor: Prof. Dr. Kousuke Yakubo  
Thesis: “Bifractality of fractal scale-free networks”

## PUBLICATION

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### Journal paper

1. M. Niedostatek, A. Baptista, **J. Yamamoto**, J. Kurths, R. Sanchez Garcia, B. MacArthur, and G. Bianconi “Mining higher-order triadic interactions.” *Nature Communications* **16**, 11613 (2025). DOI: 10.1038/s41467-025-66577-z.
2. K. Yakubo, G. Shimojo, & **J. Yamamoto** “Random walks on bifractal networks.” *Physical Review E* **110**, 064318 (2024). DOI: 10.1103/PhysRevE.110.064318.
3. **J. Yamamoto** & K. Yakubo “Bifractality of fractal scale-free networks.” *Physical Review E* **108**, 024302 (2023). DOI: 10.1103/PhysRevE.108.024302.

## PRESENTATION

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### ORAL

\*Presenter is underlined.

1. **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.
2. **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.
3. **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).
4. **J. Yamamoto**, I. Bonamassa, and M. Pósfai “Laplacian Spectra and Angular Constraints in Physical Networks” Annual DYNASNET Meeting, October 16, 2024 (Valtice, Czech).
5. **J. Yamamoto** and K. Yakubo “Bifractal property of stochastic scale-free networks,” The Physical Society of Japan 77th Annual Meeting, March 15, 2022 (Online).
6. **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. **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.
2. **J. Yamamoto** and K. Yakubo “Bifractality of scale-free networks,” Network Science Seminar 2021 (Kanawaza), December 11–12, 2021. *Poster Award*.

## AWARD & SCHOLARSHIP

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

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

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

**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

## TEACHING

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### 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),  
Education and Research Centre for Mathematics and Data Sciences Spring AY2021/2022

## ACADEMIC SERVICE

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### 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

## OTHER EXPERIENCE

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**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.

**Japan Atomic Energy Agency**  
*Summer Research Intern*

Kashiwa, Japan  
 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**  
*Research Intern*

Onna, Japan  
 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.

## WORKSHOP & SCHOOL

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

## MEMBERSHIP

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| • <b>The Physical Society of Japan</b> | Since Nov 2020. |
| • <b>Austrian Physical Society</b>     | Since Mar 2024. |

## SKILL

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- **Language:** Japanese (native); English (fluent); German (beginner)
- **Programming:** Python; C++; Julia; Fortran
- **Software:** Linux; Git; L<sup>A</sup>T<sub>E</sub>X; Mathematica