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## Education

### **Central European University** (Vienna, Austria)

Department of Network and Data Science.

Doctor of Philosophy, Network Science, September 2023 – Present

GPA: 4.00/4.00 (as of May 26, 2025).

Project: “*Topological and spectral properties of physical networks*”

Supervisor: Prof. Márton Pósfai, Prof. János Kertész

### **Queen Mary University of London** (London, UK)

School of Mathematical Sciences

Master of Science, Mathematics, September 2022 – September 2023

Grade: 96/100, distinction.

Dissertation: “*Modelling Higher-Order Network Dynamics in the Presence of Triadic Interactions*”

Supervisor: Prof. Ginestra Bianconi

Investigated the model of node dynamics on networks with triadic interactions, in which a node can regulate positively/negatively the interaction between two other nodes. Showed that the triadic interactions result in nontrivial dependence of conditional correlation coefficients between the node states on the conditional variable and that the triadic interactions in real networks may be inferred from the conditional correlation coefficients.

### **Hokkaido University** (Sapporo, Japan)

Department of Applied Science and Technology, School of Engineering.

Bachelor of Engineering, Applied Physics, April 2017 – March 2022

GPA: 4.18/4.30. Nitobe College Summa Cum Laude.

Dissertation: “*Bifractality of Fractal Scale-Free Networks*”

Supervisor: Prof. Kousuke Yakubo

Investigated analytically and numerically the multifractal property of fractal scale-free networks (FSFNs) generated by deterministic hierarchical, stochastic hierarchical, and non-hierarchical models and showed that they are bifractal and that the two local fractal dimensions implied by bifractality correspond to two types of substructures, one near the infinitely high degree hubs and the other near finite degree nodes that are infinitely distant from the infinitely high degree hubs.

### **ETH Zürich** (Zürich, Switzerland)

Department of Physics

Exchange Programme, September 2019 – May 2020

\*Terminated before the end of the academic year due to the COVID-19 pandemic.

## Employment

### **Fujitsu** (Tokyo, Japan)

Data Scientist (Part Time), DX Large Data Platform Business Group

July 2022 – September 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.

## Publications

**Preprint:**

1. Anthony Baptista, Marta Niedostatek, Jun Yamamoto, Ben MacArthur, Jürgen Kurths, Ruben Sanchez Garcia, Ginestra Bianconi. “Mining higher-order triadic interactions”, arXiv:2404.14997 [nlin.AO] (2024).

**Peer-reviewed:**

1. Kousuke Yakubo, Gentaro Shimojo, Jun Yamamoto. “Random walks on bifractal networks”, Phys Rev. E **110**, 064318 (2024).
2. Jun Yamamoto, Kousuke Yakubo. “Bifractality of fractal scale-free networks”, Phys. Rev. E **108**, 024302 (2023).

## Presentations

**Oral:**

1. Jun Yamamoto and Kousuke Yakubo. “Bifractal property of stochastic scale-free networks,” JPS 77th Annual Meeting, The Physical Society of Japan, March 15, 2022 (Online).
2. Jun Yamamoto and Kousuke Yakubo. “The multifractality of scale-free networks,” JPS 2021 Autumn Meeting, The Physical Society of Japan, September 20, 2021 (Online).

**Poster:**

3. Kousuke Yakubo and Jun Yamamoto. “Bifractal property of scale-free networks,” NetSci2024 (International School and Conference on Complex Networks), June 15–21, 2024 (Québec, Canada).
4. Jun Yamamoto, Gentaro Shimojo, and Kousuke Yakubo. “Bifractal nature of fractal scale-free networks and its implications,” Network Science Seminar 2022 in Kyoto, August 23–25, 2022.
5. Jun Yamamoto and Kousuke Yakubo. “Bifractality of scale-free networks,” Network Science Seminar 2021 in Kanawaza, December 11–12, 2021. *Poster Award*.

## Teaching

**Teaching Assistant, Introduction to Linear Algebra**, Winter AY2024/25, Central European University.

**Teaching Assistant, Statistical Mechanics I**, Spring AY2022/23, School of Engineering, Hokkaido University.

**Teaching Assistant, Applied Mathematics II**, Spring AY2022/23, School of Engineering, Hokkaido University.

**Teaching Assistant, Computational Science**, Autumn AY2021/22 / Spring AY2022/23, Education and Research Centre for Mathematics and Data Sciences, Hokkaido University.

**Teaching Assistant, MDS/AI Seminar**, Spring AY2021/2022, Education and Research Centre for Mathematics and Data Sciences, Hokkaido University.

Awards and Scholarships	<b>First-Year PhD Award, Central European University</b> Central European University, February 2025 Awarded for outstanding coursework and performance during the comprehensive exam. (One recipient per department per year)
	<b>Principal's Prize, Queen Mary University of London</b> Queen Mary University of London, November 2023 Awarded for outstanding academic achievements during my MSc studies.
	<b>Scholarship, Ito Foundation for International Education Exchange</b> September 2022 – September 2023 ¥ 3,000,000 (tuition fee) + \$ 2,000/month + flight fees
	<b>Dean's Award for Academic Achievement, Hokkaido University</b> School of Engineering, Hokkaido University, March 2022 Awarded to students with outstanding academic achievements at the School of Engineering. (one of the 14 recipients in 2022).
	<b>Lane Memorial Award, Hokkaido University</b> Hokkaido University, July 2019 Awarded to the eight students with outstanding grades in English in the first and second years of undergraduate studies.
Research Internships	<b>Nitobe Award, Hokkaido University</b> Hokkaido University, July 2018 Awarded to the best student at each school by GPA of the first year.
	<b>Japan Atomic Energy Agency</b> Summer Research Intern, Centre for Computational Science and e-Systems Project: Application of machine learning to accelerate molecular dynamics simulation July 2020 - August 2020
	<b>Okinawa Institute of Science and Technology</b> Research Intern, Quantum Wave Microscopy Unit Project: Observation of protein nanocrystals using diffraction electron microscope February 2018 - March 2018
Professional Memberships	The Physical Society of Japan, Austrian Physical Society, European Physical Society
Languages and Skills	Japanese (native), English (advanced; IELTS 8.0) Python, C++, Mathematica, Julia, Fortran, L <sup>A</sup> T <sub>E</sub> X, Linux, GitHub