Robert Jankowski

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Professional Experience

Postdoctoral Fellow 11/2025–current
TU Delft
Topic: Shortest paths in large incomplete networks
Advisor: Maksim Kitsak

Education

Ph.D. in Network Geometry 2021–2025
University of Barcelona
Thesis: *Hyperbolic Cartography of Complex Networks*
Supervisors: M. Ángeles Serrano, Marián Boguñá.

M.Sc. in Data Exploration and Interdisciplinary Modeling 2020–2021
Warsaw University of Technology
Thesis: *Interactions in signed complex networks* (Summa Cum Laude)
Supervisor: Piotr Górski

B.Sc. in Applied/Computational Physics 2016–2020
Warsaw University of Technology.
Thesis: *Predicting election polls results using machine learning tools* (Summa Cum Laude)
Supervisor: Julian Sienkiewicz

Summer Schools and Workshops

IAIFI PhD Summer School & Summer Workshop Aug 2025
Institute for AI and Fundamental Interactions, Harvard University, USA

Complementarity in Complex Networks Workshop May 2025
Delft, The Netherlands

Research Stay (AccelNet-MultiNet) Aug–Dec 2024
Luddy Center for Artificial Intelligence, Indiana University, USA
Supervisor: Santo Fortunato

LOGML Summer School Jul 2024
London, United Kingdom

Visualizing Complexity Science Workshop Aug 2023
Complexity Science Hub, Vienna, Austria.

XI GEFENOL Summer School on Statistical Physics of Complex Systems Jul 2023
Barcelona, Spain

Complex Networks: Theory, Methods, and Applications Summer School May 2022
Lake Como School of Advanced Studies, Italy

Research Publications

Preprints / Under Review

L. B. Rosselló, **R. Jankowski**, H. Bersini, M. Bogunã, M. À. Serrano. *Network representations reveal structured uncertainty in music.* arXiv:2509.14053.

M. Kim, L. Cirigliano, C. Castellano, H. Sun, **R. Jankowski**, A. Poggialini, F. Radicchi. *Shortest-path percolation on scale-free networks.* arXiv:2509.09142.

A. F. Marcús, **R. Jankowski**, M. V. Miñana, C. Casacuberta, M. À. Serrano. *Chordless cycle filtrations for dimensionality detection in complex networks via topological data analysis.* arXiv:2509.08350.

R. Jankowski, F. Radicchi, M. À. Serrano, M. Bogunã, S. Fortunato. *Task complexity shapes internal representations and robustness in neural networks.* arXiv:2508.05463.

R. Jankowski, R. Aliakbarisani, M. À. Serrano, M. Bogunã. *Mapping bipartite networks into multidimensional hyperbolic spaces.* arXiv:2503.04316.

R. Aliakbarisani, **R. Jankowski**, M. À. Serrano, M. Bogunã. *Hyperbolic Benchmarking Unveils Network Topology-Feature Relationship in GNN Performance.* arXiv:2406.02772.

Peer-reviewed

R. Jankowski, P. Hozhabrierdi, M. Bogunã, M. À. Serrano. *Feature-aware ultra-low dimensional reduction of real networks.* npj Complexity 1(1):13, 2024.

R. Jankowski, A. Allard, M. Bogunã, M. À. Serrano. *The D-Mercator method for the multidimensional hyperbolic embedding of real networks.* Nature Communications 14:7585, 2023.

R. Jankowski, A. Chmiel. *Role of Time Scales in the Coupled Epidemic-Opinion Dynamics on Multiplex Networks.* Entropy 24:105, 2022.

R. Jankowski, J. Sienkiewicz. *Determining Crucial Factors for the Popularity of Scientific Articles.* Acta Physica Polonica A 138(1):41–47, 2020.

Honors and Awards

Grants

External collaborator, YOUNG PW II grant "Application of the low-dimensional representation of real networks for localization of information source" (with Robert Paluch), Warsaw University of Technology, 2024–2026 (150,000 PLN).

Bridge grant with Lluc Bono Rosselló, Young Researchers of the Complex Systems Society (yrCSS), 2024.

Individual Funding

AccelNet-MultiNet program, 2024.

Predoctoral grant FI-SDUR, 2022–2025.

SECS scholarship (yrCSS), 2022.

Awards

Best engineering thesis in Poland, Section Physics in Economy and Social Sciences of Polish Physical Society, July 2021.

Rector's scholarship for academic performance: 2020 (3rd/317), 2019 (top 5), 2018.

Talks and Posters

Invited Talks

Network geometry and multidimensional hyperbolic maps of real networks.

Faculty of Physics, Warsaw University of Technology, Poland, 2024

Contributed Talks

Network representations reveal structured uncertainty in music.

XIII Polish Symposium on Physics in Economics and Social Sciences, Warsaw, Poland, 2025

Task complexity shapes internal representations and robustness in neural networks.

IAIFI PhD Summer School, Boston, USA, 2025

Mapping bipartite networks into multidimensional hyperbolic spaces.

NetSci 2025, Maastricht, The Netherlands, 2025

Feature-aware ultra-low dimensional reduction of real networks.

NetSci 2024, Quebec City, Canada, 2024

The D-Mercator method for the multidimensional hyperbolic embedding of real networks.

APS March Meeting, Minneapolis, USA, 2024

2nd Meeting of the Spanish Chapter of the CSS, Barcelona, Spain, 2024

Statphys28, Tokyo, Japan, 2023

NetSci 2023, Vienna, Austria, 2023

CCS 2022, Palma de Mallorca, Spain, 2022

Role of time scales in coupled epidemic-opinion dynamics on multiplex networks.

NetSci-X 2022, virtual/Porto, Portugal, 2022

The influence of relations in forming interactions among communities on social websites.

SFINKS conference, 2021. Best student presentation

Crucial factors determining the popularity of scientific articles.

10th Polish Symposium on Physics in Economy and Social Sciences, 2019

Posters

Task complexity shapes internal representations and robustness in neural networks.

IAIFI Summer Workshop, Boston, USA, 2025

Feature-aware ultra-low dimensional reduction of real networks.

3rd Meeting of the Spanish Society of Complex Systems, Madrid, Spain, 2025

D-Mercator: multidimensional hyperbolic embedding of real networks.

XXIV Congreso de Física Estadística, Pamplona, Spain, 2023

Generating interactions for friendship networks.

NetSci 2023, Vienna, Austria, 2023

From relation to interactions: a case study in Reddit website.

11th Polish Symposium on Physics in Economy and Social Sciences, 2021

Art Exhibitions

Capillary Network. Ars Electronica Festival 2025, Linz, Austria.

Capillary Network. Altering Nature: Exploring Life in Computational Art, HKUST (Guangzhou), China, April 2025.

Work Experience

Research Intern Jul–Aug 2021
Samsung R&D Institute Poland.
Working in the Bixby team, focusing on Automatic Speech Recognition.
Technologies: *Python, Docker, bash*

Student Researcher May–Dec 2021
Warsaw University of Technology. Group of Anna Chmiel.
Project "Modeling epidemic spread using comorbidities and social attitudes".

Student Researcher Nov 2020–Nov 2021
Warsaw University of Technology. Group of Janusz Hołyst.
Project ALPHORN on signed relations and structural balance (with ETH Zürich).

Research Intern Jul–Sep 2020
Samsung R&D Institute Poland.
Developing and testing deep learning models for the named entity recognition task.
Technologies: *Python, bash, Docker, Java.*

Scala Intern & Junior Scala Developer Jul–Nov 2019
TouK, Warsaw
Scala, Akka, Python, Docker, RabbitMQ.

Software Engineering Intern Jul–Aug 2018
Ilabo, Warsaw.
Web dev (C#, .NET Core) and data analysis (Python).

Conference and Workshop Organization

Network Geometry: Theory and Applications, satellite at NetSci 2025, Maastricht, Netherlands.

Network Geometry: Theory and Applications, satellite at NetSci 2024, Quebec, Canada.

Professional Service

Journal Reviewer: Physical Review E, Communications Physics, Chaos, Scientific Reports, PLOS ONE, Physica A, Proceedings of the Royal Society A.

Conference Reviewer: NetSci (2024, 2025), ACM KDD 2024, MISDOOM 2022.

Teaching and Outreach

Teaching Fellow, DIS Master Class: Network Renormalization, CSH Vienna, May 2025.

Workshop about networks "Les xarxes complexes com a eina per resoldre problemes" at the Festa de la Ciència (Science Days) at the University of Barcelona, 2023–2024

Languages

English: full working proficiency (C1 Advanced certificate).

Spanish: professional working proficiency.

Polish: native.