

Peter Juhasz — Researcher

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Summary

- PhD Fellow in Mathematics
- Completed research projects in spatial statistics, network science, automated driving and complex systems
- Published multiple research papers and patented a Gaussian regression based trajectory prediction model

Education

- **PhD in Mathematics**
○ *Aarhus University, Denmark* 2022–
Thesis: Topological Data Analysis Based Models of Evolving Higher-Order Networks
- **Master of Business Administration with Highest Honors**
○ *Budapest University of Technology and Economics, Hungary, Specialized in Finance* 2019–2021
Thesis: Prediction of Popularity of Memes using Machine Learning Methods
- **Master of Science in Physics**
○ *Budapest University of Technology and Economics, Hungary, Specialized in Applied Physics* 2013–2016
Thesis: Examination of Spatially Embedded Complex Networks
Erasmus+ Scholarship: Delft University of Technology (Applied Physics)
- **Bachelor of Science in Physics**
○ *Budapest University of Technology and Economics, Hungary, Specialized in Applied Physics* 2010–2013
Thesis: Finite Element Method Plasma Simulation of Nitrogen Contaminated Ceramic Metal Halide Lamps

Professional Experience

- **Research Assistant in Spatial Statistics and Topological Data Analysis** 2022–
○ *Department of Mathematics, Aarhus University, Denmark*
 - Developed topological data analysis based models for higher-order networks
 - Proved theorems in the field of marked spatial point processes
- **Deep Learning Researcher in Automated Driving** 2021–2022
○ *Department of Automated Driving, Bosch Group Hungary*
 - Trajectory prediction with Gaussian regression
 - Real time object tracking with temporal convolutional neural networks
 - Object detection and classification with ultrasonic sensors
- **Software Architect in Automated Driving** 2018–2021
○ *Department of Automated Driving, Bosch Group Hungary*
 - Coordinated 2 teams in the integration of driver monitoring camera for hands free driving
 - Certified Professional in Software Architecture (International Software Architecture Qualification Board)
- **Software Engineer for Mobile Networks** 2016–2018
○ *Business Unit IT & Cloud Products, Ericsson Telecommunications Hungary*
 - Analyzed response times of distributed database servers for optimal load balancing
 - Coordinated a team of eight as a deputy of the product owner
 - Implemented performance critical algorithms for Smart Services Routers

Publications, Patents

- Kate Barnes, Peter Juhasz, Marcell Nagy, Roland Molontay
Topicality Boosts Popularity: A Comparative Analysis of NYT Articles and Reddit Memes 2024
Complex Networks & Their Applications XII, 02 2024.
- Christian Hirsch, Benedikt Jahnel, Sanjoy Kumar Jhawar, Peter Juhasz
Poisson approximation of fixed-degree nodes in weighted random connection models 2023
arXiv preprint, arXiv:2311.12643, 12 2023.
- Christian Hirsch, Peter Juhasz
On the topology of higher-order age-dependent random connection models 2023
arXiv preprint, arXiv:2309.11407, 9 2023.
- Peter Juhasz
Information propagation in stochastic networks 2021
Physica A: Statistical Mechanics and its Applications, 577:126070, 9 2021.
- Peter Juhasz
Method and device for predicting the trajectory of a traffic participant, and sensor system 2020
CNIPA: CN113988353A, EPO: EP3916697A1, JPO: JP2021190119A, USPTO: US2021366274A1, 5 2020.
- Peter Juhasz, Jozsef Steger, Daniel Kondor, and Gabor Vattay
A Bayesian approach to identify Bitcoin users 2018
Public Library of Science One, 13:1-21, 12 2018
- Peter Juhasz, Szabolcs Beleznai, and Istvan Maros
Finite element method plasma simulation of nitrogen contaminated metal halide lamps 2014
Comsol Conference Proceedings, 2014

Conferences, Presentations

- **Poster: Topological Data Analysis of Higher-Order Networks** 2023
Danish–Swedish Summer School on TDA and Spatial Statistics
- **Presentation: Trajectory Prediction Using a Gaussian Regression Model** 2020
Bosch Group: Bosch Innovation Day
- **Presentation: Probabilistic Localization of Bitcoin Users** 2016
Hungarian Academy of Sciences: Statistical Physics Conference
- **Poster: Dissecting Distributed Database Systems For Telecom Applications** 2016
Ericsson Telecommunications Hungary: Ericsson University Day
- **Poster: Finite Element Method Plasma Simulation of Ceramic Metal Halide Lamps** 2014
Comsol Multiphysics Conference

Teaching Experience

- **Data Project**
○ Aarhus University, Course Code: F24.550201U004.A 2024
10 ECTS Computer Project Class, Spring Semester
- **Linear Transformations**
○ Aarhus University, Course Code: E23.550171U010.A 2023
10 ECTS Exercise Class, Autumn Semester
- **Ordinary Differential Equations**
○ Aarhus University, Course Code: F23.550141U011.A 2023
5 ECTS Exercise Class, Spring Semester
- **Advanced Calculus for Engineers**
○ Aarhus University, Course Code: F23.280191U021.A 2023
10 ECTS Exercise Class, Spring Semester

Awards, Grants

- **Danish Data Science Academy PhD Fellowship (DDSA-PhD-2022-008)** 2022–2025
○ *Topological Data Analysis Based Models of Evolving Higher-Order Networks*
1 890 000 DKK
- **Hungarian National Bank Excellence Award for Outstanding Thesis and Diploma Work** 2021
○ *Digitalization, Artificial Intelligence, and the Age of Data – What Makes a Meme Viral?*
350 000 HUF

Programming Skills

- Python ● ● ● ● ●
- Git ● ● ● ● ●
- C++ ● ● ● ● ●

Languages

- Hungarian ● ● ● ● ●
- English ● ● ● ● ●
- German ● ● ● ● ●