CURRICULUM VITAE

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Employment History

2022-present **Senior Researcher.** IT4Innovations, VSB - Technical University of Ostrava.

2019-2022 **Researcher.** IT4Innovations, VSB - Technical University of Ostrava.

2016-2018 **Research Assistant.** IT4Innovations, VSB - Technical University of Ostrava.

2014-2015 **Junior Data Analyst.** IT4Innovations, VSB - Technical University of Ostrava.

Education

2015-2018 **Ph.D., Computational Sciences**, VSB - Technical University of Ostrava.

Thesis title: *Tools for time series analysis of nonlinear dynamical systems*.

2012-2015 **Ing., Quantitative Methods in Economy**, Masaryk University.

Thesis title: *Investigating uncertainty in the estimates of potential output and the NAIRU*.

2009-2012 **Bc., Mathematical Methods in Economics**, Prague University of Economics and Business.

Thesis title: *Operation research applications in public sector*.

Research Publications

Journal Articles

1. Dejan Brkić et al. “ShinyEnet: an in-house simulation software for data-driven waste-to-energy gasification and pyrolysis.” *International Journal of Sustainable Energy*, 2026. DOI: 10.1080/14786451.2026.2673270.
2. Adil Jhangeer et al. “A new technique for characterizing nonlinear dynamical system behavior using self-organizing maps and clustering.” *Ain Shams Engineering Journal*, 2026. DOI: 10.1016/j.asej.2026.104206.
3. Janeide Padilha et al. “Real-time tracking must be at the core of sustainable development goals.” *AMBIO*, 2026. DOI: 10.1007/s13280-026-02465-0.
4. Andrii Patrikei et al. “Essential time series characteristics for human motion analysis based on Self-Organizing Map clustering.” *Acta Gymnica*, 2026. DOI: 10.5507/ag.2026.004.

5. Muhammad Iqbal et al. “Demonstration of Sensitive Analysis and Optical Soliton Patterns in a (4+1) Dimensional Boiti-Leon-Manna Pempinelli Equation: Dynamic Insights into Bifurcation, Chaotic Behavior.” *Chaos Theory and Applications*, 2025. DOI: 10.51537/chaos.1518307.
6. Stéphane Louise et al. “Modeling and implementing an earthquake and tsunami event-triggered, time-constrained impact assessment workflow.” *The International Journal of High Performance Computing Applications*, 2025. DOI: 10.1177/10943420251343794.
7. Allan Souza et al. “Fragmented Networks: Challenges in communication and cohesion of European Biodiversity Research Infrastructures.” *Biodiversity Data Journal*, 2025. DOI: 10.3897/BDJ.13.e148079.
8. Desalegn Chala et al. “Prototype biodiversity digital twin: crop wild relatives genetic resources for food security.” *Research Ideas and Outcomes*, 2024. DOI: 10.3897/rio.10.e125192.
9. Jürgen Groeneveld et al. “Prototype Biodiversity Digital Twin: honey bees in agricultural landscapes.” *Research Ideas and Outcomes*, 2024. DOI: 10.3897/rio.10.e125167.
10. Joan Planas-Iglesias et al. “AggreProt: a web server for predicting and engineering aggregation prone regions in proteins.” *Nucleic Acids Research*, 2024. DOI: 10.1093/nar/gkae420.
11. Simon Rolph et al. “Prototype Digital Twin: Recreation and biodiversity cultural ecosystem services.” *Research Ideas and Outcomes*, 2024. DOI: 10.3897/rio.10.e125450.
12. Franziska Taubert et al. “Prototype Biodiversity Digital Twin: grassland biodiversity dynamics.” *Research Ideas and Outcomes*, 2024. DOI: 10.3897/rio.10.e124168.
13. Tomas Martinovic and Jan Fulnecek. “Fast Algorithm for Contactless Partial Discharge Detection on Remote Gateway Device.” *IEEE Transactions on Power Delivery*, 2022. DOI: 10.1109/TPWRD.2021.3104746.
14. T. Martinovič. “Alternative approaches of evaluating the 0-1 test for chaos.” *International Journal of Computer Mathematics*, 2020. DOI: 10.1080/00207160.2019.1701662.
15. Tomáš Martinovič and Georg Zitzlsberger. “Highly scalable algorithm for computation of recurrence quantitative analysis.” *The Journal of Supercomputing*, 2019. DOI: 10.1007/s11227-018-2350-5.
16. Tomáš Martinovič. “Chaotic behaviour of noisy traffic data.” *Mathematical Methods in the Applied Sciences*, 2018. DOI: 10.1002/mma.4234.
17. Marek Lampart and Tomas Martinovic. “A survey of tools detecting the dynamical properties of one-dimensional families.” *Advances in Electrical and Electronic Engineering*, 2017. DOI: 10.15598/aeee.v15i2.2314.

Books and Chapters

1. Rubén J. García-Hernández et al. “Event-Driven, Time-Constrained Workflows.” In *HPC, Big Data, and AI Convergence Towards Exascale*, CRC Press, 2022. DOI: 10.1201/9781003176664-7.
2. Thierry Goubier et al. “Earthquake and Tsunami Workflow Leveraging the Modern HPC/Cloud Environment in the LEXIS Project.” In *Advances in Networked-based Information Systems*, Springer, 2020. DOI: 10.1007/978-3-030-29029-0_21.
3. Thierry Goubier et al. “Real-Time Model of Computation over HPC/Cloud Orchestration - The LEXIS Approach.” In *Complex, Intelligent and Software Intensive Systems*, Springer, 2021. DOI: 10.1007/978-3-030-50454-0_24.
4. Marek Lampart and Tomáš Martinovič. “CML-Tent Model Chaotic Behavior with Respect to the State and Coupling Parameters.” In *Chaos and Complex Systems*, Springer, 2020. DOI: 10.1007/978-3-030-35441-1_2.
5. Tomáš Martinovič et al. “Automated Application of Inventory Optimization.” In *Computer Information Systems and Industrial Management*, Springer, 2016. DOI: 10.1007/978-3-319-45378-1_21.

6. Tomáš Martinovič et al. “Inventory Optimization Model Parameter Search Speed-Up Through Similarity Reduction.” In *Soft Computing Applications*, Springer, 2021. DOI: 10.1007/978-3-030-51992-6_9.

7. Tomáš Martinovič et al. “Sequence Analysis for Relationship Pattern Extraction.” In *Computer Information Systems and Industrial Management*, Springer, 2019. DOI: 10.1007/978-3-030-28957-7_29.

8. Lukáš Rapant et al. “Traffic Speed Prediction Using Hidden Markov Models for Czech Republic Highways.” In *Agent and Multi-Agent Systems: Technology and Applications*, Springer, 2016. DOI: 10.1007/978-3-319-39883-9_15.

9. Alberto Scionti et al. “HPC, Cloud and Big-Data Convergent Architectures: The LEXIS Approach.” In *Complex, Intelligent, and Software Intensive Systems*, Springer, 2020. DOI: 10.1007/978-3-030-22354-0_19.

Scientific Projects

Primary investigator

2026-2030 **PeatGenie**, Simulating Management Decisions with Peatland Digital Twins and Generative AI.
DOI: 10.3030/101287905. *Work Package Leader*.

2023-2027 **DTO-BioFlow: Integration of biodiversity monitoring data into the Digital Twin Ocean.**
DOI: 10.3030/101112823. *Task Leader*.

2022-2025 **BioDT: Biodiversity Digital Twin for Advanced Modelling, Simulation and Prediction Capabilities.**
DOI: 10.3030/101057437. *Work Package Leader*.

2023-2026 **Apollo data s.r.o. - Application 1 - EyeERP - a comprehensive ERP system for eye clinics with the MojeOči mobile application for performing and analyzing eye tests.**
E122_002/0000436.

International

2026-2029 **Czech AI Factory.**
DOI: 10.3030/101314740. *Work Package Co-Leader*.

2025-2028 **LAIFS: LUMI AI Factory - Service Center.**
DOI: 10.3030/101234208.

2025-2027 **InnovAIte Slovakia: Illuminating Pathways for AI-Driven Breakthroughs.**
09I02-03-V01-00029.

2023-2026 **EXA4MIND: EXtreme Analytics for MINing Data spaces.**
DOI: 10.3030/101092944. *Task Leader*.

2021-2024 **ACROSS: HPC Big Data Artificial Intelligence Cross Stack Platform Towards Exascale.**
DOI: 10.3030/955648. *Task Leader*.

2020-2022 **EuroCC: National Competence Centres in the framework of EuroHPC.**
DOI: 10.3030/951732.

2019-2021 **LEXIS: Large-scale EXecution for Industry & Society.**
DOI: 10.3030/825532. *Task Leader*.

National

2026-present **Národní Centrum Umělé Inteligence**, details to be confirmed.

2021-2023 **SmartFleet - AI-based software for full use of electric vehicles in companies and maximizing their share in the vehicle fleet.**
EG20_321/0024896.

2019-2021 **Contact-less detector for partial discharges activity in medium overhead voltage powerlines.**
TJ02000031.

2016-2020 **IT4Innovations excellence in science.**
LQ1602.

Contractual research

2016-2017 **IXPERTA s.r.o.**

2015-2016 **K2 Atmitec s.r.o.**

Teaching Experience

University Courses

since 2019 **Libraries for parallel data processing.**
Tutor, teacher giving lectures.

Bachelor/Diploma Thesis

2026 Petr Kladov, *Kolmogorov-Arnold Network analysis and comparison with classical neural networks*, VSB - Technical University of Ostrava.
Diploma Thesis - Supervisor.

2023 Matěj Eliáš, *Tool for iterative visualization of selected protein characteristics in a web interface*, VSB - Technical University of Ostrava.
Bachelor Thesis - Supervisor.

2020 Jan Pastorek, *Use of High-level Synthesis to accelerate application development to programmable logic*, VSB - Technical University of Ostrava.
Bachelor Thesis - Consultant.

Training Events

May 2026 AI Confidential, Prague.

April 2026 AI Confidential, Brno.

April 2026 AI Confidential, Ostrava.

June 2025 Python for Data Stewards, Ostrava.

April 2025 Python for HPC, Online.

May 2024 Parallel R, Online.

April 2023 High Performance Data Analysis with R, Ostrava/Hybrid.

May 2022 Data science with R and Python, Online.

September 2020 Applied Image Segmentation using Intel Architecture, Online.

July 2020 Deep Learning on Intel Architecture, Online.

May 2020 Deep Learning on Intel Architecture, Online.

July 2019 Intel AIDC Summit, Munich.

June 2019 Hands-on Developer Workshop for Artificial Intelligence, Milan.

April 2019 — Data science with R and Python - Ostrava.

Summer School Lectures

September 2026 — **Program committee and lectures**, CZAI Summer School, Ostrava.

March 2025 — **Organising committee and lectures**, BioDT School, Lecce.

August 2024 — **Data Science with R**, EUMaster4HPC, Summer School, Ostrava.

June 2023 — **Data Science with R**, SCTrain Summer School, Ostrava.

Miscellaneous Experience

Awards

June 2019 — **Best Poster Award**, *HPC Oriented Algorithm for Computation of Recurrence Quantitative Analysis*, ISC High Performance 2019.

May 2019 — **1st Place in The Competition for the Best Dissertation Defended in 2018, Topic: Information Technology and Electrical Engineering**.

Tools for time series analysis of nonlinear dynamical systems, VSB - Technical University of Ostrava and Consortium PROGRES 3.

Scientific Reviews

since 2026 — Frontiers in Plant Science.

since 2026 — SKV - Systém kvalitních výsledků.

since 2025 — Journal of Science and Technology.

since 2024 — Ecological Informatics.

since 2024 — Ecological Modelling.

since 2019 — International Journal of Computer Mathematics.

since 2018 — The Journal of Supercomputing.

since 2018 — Mathematical Methods in the Applied Sciences.

since 2016 — CISIM - International Conference on Computer Information Systems and Industrial Management.

Participation in Organisations and Conference

2026 — TDWG 2026 co-convening session on *Digital Twins, Data Infrastructures*.

since 2026 — ELIXIR CZ AI Positioning framework.

since 2024 — ETP4HPC SRA7 HPC / AI Applications and Workflows.

since 2020 — BDVA Task Force Finance.

International Mobility

June-November 2018 — Politecnico di Milano, Dipartimento di Elettronica, Informazione e Bioingegneria.

Other

June 2024 — **Invited Panel Discussion.** Distributed Digital Twins: Engineering Challenges and Future Trends.