

doc. Ing. Jakub Kůdela, Ph.D.

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## Work experience

- 2024 – : Associate professor, Institute of Automation and Computer Science, Brno University of Technology
- 2020 – 2024: Assistant professor, Institute of Automation and Computer Science, Brno University of Technology
- 2018 – 2020: Lecturer, Assistant, Institute of Automation and Computer Science, Brno University of Technology
- Research area: Optimization models and algorithms
- Teaching: Informatics, Optimization courses (currently three different ones)
- Supervision: 23 Master's and 9 Bachelor's students (all successfully defended)

## Education and academic qualifications

- 2024: doc., Computer Science and Informatics, Faculty of Information Technology, Brno University of Technology
- 2014 – 2019: Ph.D, Applied Mathematics, Institute of Mathematics, Brno University of Technology
- 2012 – 2014: Ing. (equiv.), Engineering and mathematical-physical modelling, Università degli Studi dell'Aquila, Italy
- 2012 – 2014: Ing., Mathematical Engineering, Institute of Mathematics, Brno University of Technology
- 2009 – 2012: Bc., Mathematical Engineering, Institute of Mathematics, Brno University of Technology

## Research output (summary)

- 66 peer-reviewed papers (39 in Web of Science)
- WoS: 495 citations, h-index 11
- Scopus: 715 citations, h-index 13
- Google Scholar: 963 citations, h-index 14
- Reviews of more than 80 papers in WoS journals (Expert Systems with Applications; Soft Computing; IEEE Transactions on Evolutionary Computation; IEEE Transactions on Systems, Man, and Cybernetics; Journal of Cleaner Production; IEEE Access; Mathematics; etc.) and prestigious conferences (GECCO, IEEE CEC)

- Evaluation of projects: MSCA-PF (EU projects), NWO Open Competition Domain Science - M (projects of the „Dutch Research Council“), INTER-EXCELLENCE (projects of the “Ministry of Education, Youth and Sport of the Czech Republic”)

## Projects

- Co-Investigator: DIGITAL-HEAT: Digitální transformace a optimalizace teplotních profilů v sítích CZT, Technology Agency of the Czech Republic, 2025-2028
- Principal Investigator: Benchmarking derivative-free global optimization methods, Czech Science Foundation, 2024-2026
- Team member: MEBioSys – Strojní inženýrství biologických a bioinspirovaných systémů, Operational programme Johannes Amos Comenius, 2023-2028
- Team member: Adaptive soft computing framework for inverse heat transfer problems with phase change, Czech Science Foundation, 2022-2024
- Team member: Computer Simulations for Effective Low-Emission Energy, Czech Republic Operational Programme Research and Development, Education, Priority 1: Strengthening capacity for quality research, 2018-2022
- Team member: TIRSMZP719, Prognosis of waste production and determination of the composition of municipal waste, Technology Agency of the Czech Republic, 2019-2022

## Selected publications

- Kudela, Jakub. "A critical problem in benchmarking and analysis of evolutionary computation methods." *Nature Machine Intelligence* 4.12 (2022): 1238-1245. [Q1, IF 25.898]
- Stripinis, Linas, Jakub Kúdela, and Remigijus Paulavičius. "Benchmarking derivative-free global optimization algorithms under limited dimensions and large evaluation budgets." *IEEE Transactions on Evolutionary Computation* (2024). [Q1, IF 14.3]
- Kudela, Jakub. "Commentary on:“STOA: A bio-inspired based optimization algorithm for industrial engineering problems”[EAAI, 82 (2019), 148–174] and “Tunicate Swarm Algorithm: A new bio-inspired based metaheuristic paradigm for global optimization”[EAAI, 90 (2020), no. 103541]." *Engineering Applications of Artificial Intelligence* 113 (2022): 104930. [Q1, IF 7.802]
- Kudela, Jakub, and Radomil Matousek. "Recent advances and applications of surrogate models for finite element method computations: A review." *Soft Computing* (2022): 1-25. [Q2, IF 3.732]
- Kudela, Jakub, and Radomil Matousek. "Combining Lipschitz and RBF Surrogate Models for High-dimensional Computationally Expensive Problems." *Information Sciences* (2022). [Q1, IF 8.233]

- Kudela, Jakub, et al. "Assessment of the performance of metaheuristic methods used for the inverse identification of effective heat capacity of phase change materials." *Expert Systems with Applications* 238 (2024): 122373. [Q1, IF 8.5]
- Mauder, Tomáš, Jakub Kůdela, Lubomír Klimeš, Martin Zálešák, and Pavel Charvát. "Soft computing methods in the solution of an inverse heat transfer problem with phase change: A comparative study." *Engineering Applications of Artificial Intelligence* 133 (2024): 108229. [Q1, IF 8.0]
- Kudela, Jakub, and Radomil Matousek. "New Benchmark Functions for Single-Objective Optimization Based on a Zigzag Pattern." *IEEE Access* 10 (2022): 8262-8278. [Q2, 3.476]
- Matousek, Radomil, Ladislav Dobrovsky, and Jakub Kudela. "How to start a heuristic? utilizing lower bounds for solving the quadratic assignment problem." *International Journal of Industrial Engineering Computations* 13.2 (2022): 151-164. [Q2, IF 3.271]
- Kudela, Jakub, and Martin Juricek. "Computational and exploratory landscape analysis of the gkls generator." In *Proceedings of the Companion Conference on Genetic and Evolutionary Computation*, pp. 443-446. 2023. [core A]
- Kudela, Jakub, and Ladislav Dobrovsky. "Performance Comparison of Surrogate-Assisted Evolutionary Algorithms on Computational Fluid Dynamics Problems." *International Conference on Parallel Problem Solving from Nature*. Cham: Springer Nature Switzerland, 2024. [core A]
- Kudela, Jakub. "Novel zigzag-based benchmark functions for bound constrained single objective optimization." 2021 IEEE Congress on Evolutionary Computation (CEC). IEEE, 2021. [core B]
- Kudela, Jakub, et al. "Legislation-induced planning of waste processing infrastructure: A case study of the czech republic." *Renewable and Sustainable Energy Reviews* 132 (2020): 110058. [Q1, IF 14.982]
- Kudela, Jakub. "Social distancing as p-dispersion problem." *IEEE Access* 8 (2020): 149402-149411. [Q2, IF 3.367]
- Kudela, Jakub, and Pavel Popela. "Pool & Discard Algorithm for Chance Constrained Optimization Problems." *IEEE Access* 8 (2020): 79397-79407. [Q2, IF 3.367]
- Somplak, Radovan, et al. "Pricing and advertising strategies in conceptual waste management planning." *Journal of Cleaner Production* 239 (2019): 118068. [Q1, IF 7.426]
- Kudela, Jakub, et al. "Multi-objective strategic waste transfer station planning." *Journal of Cleaner Production* 230 (2019): 1294-1304. [Q1, IF 7.426]
- Kudela, Jakub, et al. "Optimal control of combined heat and power station operation." *Optimization and Engineering* (2023): 1-25. [Q2, IF 2.1]
- Matousek, Radomil, Ladislav Dobrovsky, and Jakub Kudela. "The quadratic assignment problem: metaheuristic optimization using HC12 algorithm." *Proceedings of the Genetic and Evolutionary Computation Conference Companion*. 2019. [core A]