Antonín Novák

PERSONAL INFO

Date of birth: 26. 03. 1991
Prague
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Profiles: dblp, WoS, Scopus, GS

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OBJECTIVE

Research and development of optimization algorithms and methods for real-life problems.

h-index: 6 (WoS, no auto), citations (no auto): WoS: 106, Scopus: 118, GS: 228 (all)

EDUCATION

2015 - 2023 *Ph.D. in Operations Research, Scheduling and Discrete Optimization*, Faculty of Electrical Engineering, Czech Technical University in Prague. Thesis: *Scheduling with uncertain processing times given by empirical distributions*. Advisors: prof. Zdenek Hanzalek and prof. Premysl Sucha (CTU).

2013 - 2015 *Master of Computer Science, Major: Artificial Intelligence*, Faculty of Electrical Engineering, Czech Technical University in Prague - graduated with honors at the Department of Computer Science

2010 - 2013 *Bachelor of Cybernetics and Robotics, Major: Robotics*, Faculty of Electrical Engineering, Czech Technical University in Prague - graduated with honors at the Department of Cybernetics

EXPERIENCE

Researcher at Czech Institute of Informatics, Robotics and Cybernetics, Czech Technical University in Prague (CIIRC CTU)   07/2015–now

- Research in robust, stochastic, and distributionally robust scheduling (2017–now).
- Scheduling algorithms for business process automation for Pointee, Inc. (2024–now).
- Analysis, simulation, and the optimization of diagnostic laboratory analyzers for Beckman Coulter (2020–now).
- Electric vehicle route planner with energy consumption estimation for Skoda Auto (2021–2022).
- Research in mixed-criticality scheduling (2015–2017).

Machine Learning Researcher at Porsche Engineering   2016–2023

- Machine learning researcher and consultant for ADAS projects utilizing camera, LiDAR, and radar (2021–2023).

- Road geometry estimation from radar objects (2020).
- Research, design and development of ML-based system with connected cars for road condition prediction (09/2017–11/2018).
- Software for 3D modeling of racing circuits obtained from the scanned data into the simulator (02/2016–04/2016).

Undergraduate assistant at Cloud Computing Center FEE CTU　　2012–2014

- Research of regularities and patterns in distributed continuous word representations (2013–2014).
- Project for Seznam.cz (Czech major web search engine) to design and implement query corrector for web search engine during (2012–2013).

PROJECTS & CONTRACTS	*Business process automation (Technology Agency) — Pointee, Inc.* *Role: technical lead*	*2024–now*
	AI algorithms for driver assistance systems — Porsche Engineering. *Role: project & technical lead*	*2020–2023*
	Analysis of MIP models — ČEZ (the largest energy producer in CZE). *Role: project & technical lead*	*2023*
	Simulation of laboratory analyzers — Beckman Coulter. *Role: technical lead*	*2022*
	Connected Motor Starter (Ministry of Industry and Trade) — Eaton. *Role: PI of the university*	*2021–2023*
	EV Route Planner — Skoda Auto. *Role: project & technical lead*	*2021–2022*
	Factory of Future (Ministry of Industry and Trade) — Eaton. *Role: PI of the university*	*2017–2019*
	AI Friction Map — Porsche Engineering. *Role: research engineer*	*2017–2018*

TEACHING	*Combinatorial Algorithms course at FEE CTU*	*2022–now*
	Combinatorial Optimization course at FEE CTU	*2016–2022*

SPOKEN LANGUAGES	Czech (native), English (fluent)

SKILLS
General: Mathematical and CS background, mathematical optimization, solvers, machine learning, programming
Languages & Software: Python, Java, Matlab, Gurobi Optimizer, CP Optimizer

RECENT AWARDS
2023 Dean's award for the supervisor of an outstanding master thesis
2021 Dean's award for the supervisor of an outstanding master thesis
2019 Best Student Paper Award, ICORES-19
2019 Dean's award for the supervisor of an outstanding master thesis
2018 Dean's award for the best faculty lab teacher
2015 UPE Scholarship Award

SELECTED PUBLICATIONS
Benedikt, O.; Módos, I.; Novák, A.; Hanzálek, Z. Green Scheduling with Time-of-Use Tariffs and Machine States: Optimizing Energy Cost via Branch-and-Bound and Bin Packing Strategies. To appear in European Journal of Operational Research, 2025.

Bouška, M.; Šůcha, P.; Novák, A.; Hanzálek, Z. Deep learning-driven scheduling algorithm for a single machine problem minimizing the total tardiness, European Journal of Operational Research, 2023.

Novák, A.; Gnatowski, A.; Šůcha, P. *Distributionally robust scheduling algorithms for total flow time minimization on parallel machines using norm regularizations*, European Journal of Operational Research, 2022.

Novák, A.; Hanzálek, Z. *Computing the execution probability of jobs with replication in mixed-criticality schedules*, Annals of Operations Research, 2022.

Novak, A.; Sucha, P.; Novotny, M; Stec, R.; Hanzalek, Z. *Scheduling jobs with normally distributed processing times on parallel machines*, European Journal of Operational Research, 2022.

Heinz, V.; Novák, A.; Vlk, M.; Hanzálek, Z. Constraint Programming and constructive heuristics for parallel machine scheduling with sequence-dependent setups and common servers. Computers & Industrial Engineering, 2022.

Hejl, L.; Šůcha, P.; Novák, A.; Hanzálek, Z. Minimizing the weighted number of tardy jobs on a single machine: Strongly correlated instances. European Journal of Operational Research, 2022.

Klapálek, J.; Novák, A.; Sojka, M.; Hanzálek, Z. *Car Racing Line Optimization with Genetic Algorithm using Approximate Homeomorphism* In: 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (CORE A*), 2021.

Vlk, M.; Novák, A.; Hanzálek, Z. *Makespan Minimization with Sequence-dependent Non-overlapping Setups* In: Proceedings of the 8th International Conference on Operations Research and Enterprise Systems. (*best student paper award*) 2019.

Novák, A.; Sucha, P.; Hanzalek, Z.. *Scheduling with uncertain processing times in mixed-criticality systems*, European Journal of Operational Research, 2019

Stec, R; Novák, A.; Sucha, P.; Hanzalek, Z. *Scheduling Jobs with Stochastic Processing Time on Parallel Identical Machines*, IJCAI-19, 2019, main track (CORE A*)

Václavík, R.; Novák, A.; Šůcha, P.; Hanzálek, Z. *Accelerating the Branch-and-Price Algorithm Using Machine Learning*, European Journal of Operational Research, 2018.