

Jan Hůla

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EMPLOYMENT HISTORY

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|-------|--|
| 2019- | Researcher at Institute for Research and Applications of Fuzzy Modeling (computer vision group) |
| 2020- | Researcher at Czech Institute of Informatics, Robotics and Cybernetics (department of automated reasoning) |

EDUCATION

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| 2015-2022 | University of Ostrava , Ph.D. degree, <i>Applied Mathematics</i> (Advisor: Irina Perfilieva, thesis: Three Novel Approaches to Data-driven Modeling) |
| 2005-2011 | Tomas Bata University , M.A. degree, <i>Industrial Design</i> |

INTERNSHIPS & WORKSHOPS

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| 2023 | Harvard University , Fulbright scholar at Samuel Gershman's lab, Department of Psychology |
| 2019 | Source{d} , Research intern, <i>Machine Learning on Code team</i> (currently Athenian.com) |
| 2018 | Johns Hopkins University , visiting student, <i>Department of Cognitive Science</i> (Advisor: Paul Smolensky, Neuro-symbolic lab) |
| 2017 | Technical University Wien , visiting student, Cyber-Physical Systems Group |

Workshops

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| 2019 | 1st place in Kornia Hackathon 2019 (together with Hassan Abu Alhajja and Pau Riba), Barcelona |
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PUBLICATIONS

Koutecká, P., Šůcha, P., Hůla, J., & Maenhout, B. (2025). A machine learning approach to rank pricing problems in branch-and-price. *European Journal of Operational Research*, 320(2), 328-342.

Khona, M., Okawa, M., Hula, J., Ramesh, R., Nishi, K., Dick, R., ... & Tanaka, H. (2024). Towards an Understanding of Stepwise Inference in Transformers: A Synthetic Graph Navigation Model. *ICML 2024*.

Hůla, J., Mojžíšek, D., & Janota, M. (2024, October). Understanding GNNs for Boolean Satisfiability through Approximation Algorithms. In *Proceedings of the 33rd ACM International Conference on Information and Knowledge Management* (pp. 953-961).

Hurtík, P., Tomasiello, S., Hula, J., & Hýnar, D. (2022). Binary cross-entropy with dynamical clipping. *Neural Comput. Appl.*, 34, 12029-12041.

Mojžíšek, D., & Hula, J. (2022). Image Classifier with Dynamic Set of Known Classes. *ITAT*.

Hurtík, P., Molek, V., Hula, J., Vajgl, M., Vlasánek, P., & Nejezchleba, T. (2022). Poly-YOLO: higher speed, more precise detection and instance segmentation for YOLOv3. *Neural Computing and Applications*, 34, 8275-8290.

Chen, X., Hula, J., & Dvořák, A. (2022). Analysis of the Semantic Vector Space Induced by a Neural Language Model and a Corpus. *ITAT*.

Hula, J., Jakubuv, J., Janota, M., & Kubej, L. (2022). Targeted Configuration of an SMT Solver. *CICM*.

Hula, J., Mojžíšek, D., & Adamczyk, D. (2022). 3D Shapes Classification Using Intermediate Parts Representation. *IPMU*.

Hula, J., Mojžíšek, D., & Janota, M. (2021). Graph Neural Networks for Scheduling of SMT Solvers. *2021 IEEE 33rd International Conference on Tools with Artificial Intelligence (ICTAI)*, 447-451.

Hula, J., Adamczyk, D., Mojžíšek, D., & Molek, V. (2021). Segmenting out Generic Objects in Monocular Videos. *ITAT*.

Hula, J. (2020). Unsupervised Object-aware Learning from Videos. *2020 IEEE Third International Conference on Data Stream Mining & Processing (DSMP)*, 237-242.

Hula, J., Mojžíšek, D., Adamczyk, D., & Čech, R. (2020). Acquiring Custom OCR System with Minimal Manual Annotation. *2020 IEEE Third International Conference on Data Stream Mining & Processing (DSMP)*, 231-236.

Hurtík, P., Molek, V., & Hula, J. (2020). Data Preprocessing Technique for Neural Networks Based on Image Represented by a Fuzzy Function. *IEEE Transactions on Fuzzy Systems*, 28, 1195-1204.

Adamczyk, D., & Hula, J. (2020). Keypoints Selection Using Evolutionary Algorithms. *ITAT*.

Long, W., Markovtsev, V., Mougard, H., Bulychev, E., & Hula, J. (2019). Identifying collaborators in large codebases. *ArXiv*, *abs/1905.06782*.

Wang, A., Hula, J., Xia, P., Pappagari, R., McCoy, R.T., Patel, R., Kim, N., Tenney, I., Huang, Y., Yu, K., Jin, S., Chen, B., Durme, B.V., Grave, E., Pavlick, E., & Bowman, S.R. (2019). Can You Tell Me How to Get Past Sesame Street? Sentence-Level Pretraining Beyond Language Modeling. *ACL*.

Čech, R., Hula, J., Kubát, M., Chen, X., & Milička, J. (2019). The Development of Context Specificity of Lemma. A Word Embeddings Approach. *Journal of Quantitative Linguistics*, 26, 187 - 204.

Hula, J., Kubát, M., Čech, R., Chen, X., Cíz, D., Pelegrinová, K., & Milička, J. (2019). Context Specificity of Lemma. Diachronic Analysis. *Glottometrics*, 45, 7-23.

Kubát, M., Hula, J., Chen, X., Čech, R., & Milička, J. (2018). The lexical context in a style analysis: A word embeddings approach. *Corpus Linguistics and Linguistic Theory*, 17, 443 - 464.

Bowman, S.R., Pavlick, E., Grave, E., Durme, B.V., Wang, A., Hula, J., Xia, P., Pappagari, R., McCoy, R.T., Patel, R., Kim, N., Tenney, I., Huang, Y., Yu, K., Jin, S., & Chen, B. (2018). Looking for ELMo's friends: Sentence-Level Pretraining Beyond Language Modeling. *ArXiv*, *abs/1812.10860*.

Hula, J., Perfilieva, I., & Muzaheed, A.A. (2017). Towards Visual Training Set Generation Framework. *IWANN*.

NON-ACADEMIC PUBLICATIONS

2018 **Love and Math: The Heart of Hidden Reality**
translation of a book popularizing mathematics into the
Czech language (published by Dokořán)

TEACHING

2015-16, winter	Advanced linear algebra, Teaching assistant
2016-17, summer	Discrete mathematics, Teaching assistant
2016-17, winter	Discrete mathematics, Lecturer
2016-17, winter	Introduction to Deep Learning, Lecturer
2017-18, summer	Programming for mathematicians, Lecturer
2017-18, summer	Introduction to Deep Learning, Lecturer
2017-18, winter	Introduction to linear algebra, Teaching assistant
2020-21, winter	Introduction to Deep Learning, Lecturer
2021-22, winter	Introduction to Deep Learning, Lecturer
supervision	three bachelor's theses, three master's theses, currently co-advising three doctoral theses.

COMMUNITY SERVICE

2022	Machine Learning hackathon in Malenovice (organizer)
2021	Workshop on Geometric Deep Learning in Malenovice (organizer)
2020-2021	Deep Learning reading group at IRAFM (organizer)
2020-2021	Student's grant project - SGS (manager)
2019	The 11th Conference of the European Society for Fuzzy Logic and Technology organized jointly with the IQSA Workshop on Quantum Structures, Prague, 2019 (co-organizer)
2017	International Conferences for Undergraduate and Graduate Students of Applied Mathematics. Malenovice, 2016 (co-organizer)
2016	2nd European Summer School on Fuzzy Logic and Applications, Celandá, Czech Republic (co-organizer)
2016	International Conferences for Undergraduate and Graduate Students of Applied Mathematics. Malenovice, 2016 (co-organizer)