

Viliam Lisý

Associate Professor

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Researcher in multi-agent learning, algorithmic game theory, and cybersecurity with 15+ years' experience leading foundational research and deploying large-scale, real-world AI applications.

EMPLOYMENT

- Jan 2017 – now **Czech Technical University in Prague.** Assistant → Associate Professor. Focus on multi-agent reinforcement learning, algorithmic game theory, and cybersecurity.
- Proposed research projects funded by three grant agencies and two industrial partners.
 - Designed, organized and regularly lectured three courses for 100+ students.
 - Consistently funded and supervised five (soon six) Ph.D. students to completion.
- Sep 2019 – Feb 2024 **Avast → Gen Digital** (Norton, Avira, AVG, etc.). Principal AI Scientist → AI Architect. Served as the technical lead on multiple projects deploying novel AI methods.
- Led transformation of rule-based malware detector used by 350M users to deep learning.
 - Led the program of human-centered digital safety, inventing new AI-based products.
 - Convinced leadership to negotiate with the EU about regulating safety on social networks.
 - Led explainability and rule generation efforts in close collaboration with malware analysts.
 - Led AI architecture of LLM-based scam analysis assistant from conception to release.
 - Co-authored three US patents.
- May 2015 – Feb 2017 **University of Alberta**, Edmonton, Canada. Postdoc. fellow with prof. Michael Bowling.
- Co-authored first AI outperforming human pros in no-limit poker published in Science.
- Nov 2007 – Dec 2016 **Czech Technical University in Prague.** Research scientist on fundamental and applied projects in game theory, planning, machine learning, behavior modeling, and cyber security.
- May – July 2009 **Carnegie Mellon University**, Pittsburgh, USA. Visiting Research Assistant. Distributed constrained optimization for making mobile sensor networks robust against deception.
- March–May 2010 **Philips CE, Innovation Laboratory**, Eindhoven, The Netherlands. Internship on automated emotion recognition culminating in two publications.
- Mar – Jun 2006 **Philips CE, Innovation Laboratory**, Eindhoven, The Netherlands. Internship on automated emotion recognition culminating in two publications.

SELECTED PUBLICATIONS

- Science 2017 M. Moravcik, M. Schmid, N. Burch, **V. Lisý**, et al.: *DeepStack: Expert-level artificial intelligence in heads-up no-limit poker*. Science, 356 (6337), 508-513.
- ICLR 2026 O. Kubicek, **V. Lisý**: *Look-ahead Reasoning with a Learned Model in Imperfect Information Games*.
- AIJ 2023 V. Kovarik, D. Seitz, **V. Lisý**, J. Rudolf, S. Sun, K. Ha: *Value Functions for Depth-Limited Solving in Zero-Sum Imperfect-Information Games*. Artificial Intelligence 314, p.103805.
- WS@ESORICS 2023 J. Janisch, T. Pevny, **V. Lisý**: *NASimEmu: Network Attack Simulator & Emulator for Training Agents Generalizing to Novel Scenarios*.
- JMLR 2022 S. Mandlik, M. Racinsky, **V. Lisý**, T. Pevny: *JsonGrinder.jl: automated differentiable neural architecture for embedding arbitrary JSON data*. Journal of ML Research 23 (298).
- CSJ 2019 K. Durkota, **V. Lisý**, B. Bosansky, C. Kiekintveld, M. Pechoucek: *Hardening networks against strategic attackers using attack graph games*. Computers & Security 87, 101578.
- AAAI 2019 J. Janisch, T. Pevny, and **V. Lisý**: *Classification with costly features using deep reinforcement learning*.
- AAMAS 2015 **V. Lisý**, M. Lanctot, M. Bowling: *Online Monte Carlo Counterfactual Regret Minimization for Search in Imperfect Information Games*.
- NeurIPS 2013 **V. Lisý**, V. Kovarik, M. Lanctot and B. Bosansky: *Convergence of Monte Carlo Tree Search in Simultaneous Move Games*.
- AAMAS 2010 **V. Lisý**, R. Zivan, K. Sycara, M. Pechoucek: *Deception in Networks of Mobile Sensing Agents*.

OTHER PUBLICATIONS

2007 - now	Over 35 publications in top tier AI and ML venues (Google Scholar).
Multi-agent learning	Designed and formally analyzed new formal representations. Designed, implemented, evaluated, and proved convergence of learning algorithms for games with imperfect information, simultaneous moves, continuous actions, and execution uncertainty.
Reinforcement learning	NN architectures for RL with dynamic size input and action spaces. Shown that RL outperforms specialized algorithms in active learning. Designed a powerful automated penetration testing agent.
Game theory	Novel algorithms for computing various equilibria. Computational complexity analysis of game theoretic problems. Modelling real world security problems. Adaptation to boundedly rational opponents.
Cybersecurity	Detecting evading attackers. Automated penetration testing based on attack graphs. Strategic deception against a rational attackers.

TECHNOLOGY EXPERIENCE

Production	Hands on: Julia + Flux, Python, Kubernetes, GCP, Bash. Advising: PyTorch.
Research	Hands on: Python, Julia, PyTorch, Java, C, C++. Advising: JAX, TensorFlow.
Lecturing	Taught a university course on functional programming: Haskell, Lisp, Scala.

SELECTED RESEARCH GRANTS

Jan 2018 - now	Principal Investigator, three consecutive projects on multi-agent reinforcement learning in large imperfect information games, Czech Science Foundation.
Jan 2018 - 2019	Principal Investigator, Adversarial Machine Learning for Cybersecurity, Trend Micro.
Nov 2015 - Oct 2016	Principal Investigator, Game Theory based Optimization of Defensive Network Configuration, Cisco Systems, Inc.
Oct 2013 - Sep 2015	Principal Investigator, Optimizing Heterogeneous Intrusion Detection System Against Rational Adversary, US Office of Naval Research Global.
2008 - 2014	Team member on grant projects from Czech government and US defense agencies.

EDUCATION

2015	Ph.D. in Artificial Intelligence. Artificial Intelligence Center, Department of Computer Science, Czech Technical University in Prague. http://aic.fel.cvut.cz
thesis	<i>Monte Carlo Tree Search in Imperfect-Information Games</i>
2008	Mgr. (M.Sc. equivalent) in Theoretical Computer Science. Department of Theoretical Computer Science and Mathematical Logic, Faculty of Mathematics and Physics, Charles University in Prague, Czech Republic. http://www.mff.cuni.cz
thesis	<i>Approximation of Hard Scheduling Problems – hardness proofs, polynomial approximations</i>
2006	M.Sc. in Technical Artificial Intelligence (cum laude). Faculty of Sciences, Vrije Universiteit Amsterdam, The Netherlands. http://www.few.vu.nl
thesis	<i>Automatic Classification of Human Emotions Using Physiological Signals</i>

SERVICE - AWARDS - SCHOLARSHIPS

2013 - now	Regular program committee member: AAMAS, IJCAI, AAAI, NeurIPS, ICML.
2015 - now	Editorial board member for AIJ. Reviewer for: IEEE TIFS, IEEE T Cybernetics, TEAC.
2016 - 2017	Main organizer of AAAI Workshops on Computer Poker and Imperfect Information Games.
2010 - 2013	Student scholarships for attending the IJCAI, NIPS, AAMAS, ECAI conferences.