

# Jakub Černý

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## RESEARCH INTERESTS

Decision making, game theory, bounded rationality, behavioral models, human-machine interactions, cooperation, coordination, persuasion, uncertainty, robustness, optimization.

## EDUCATION

### Doctor of Philosophy

*School of Computer Science and Engineering*

Thesis: Commitment and Coordination in Boundedly Rational Interactions

Fellowship: A\*STAR SINGA Award

**Nanyang Technological University**

2019 – 2023

### Master of Science in Discrete Models and Algorithms

*Department of Applied Mathematics, Faculty of Mathematics and Physics*

Thesis: Computational Bounded Rationality

**Charles University**

2014 – 2017

### Master of Science in Artificial Intelligence

*Department of Computer Science, Faculty of Electrical Engineering*

Minor: Robotics

Thesis: Stackelberg Extensive-Form Correlated Equilibrium with Multiple Followers

**Czech Technical University**

2014 – 2016

### Bachelor of Science in Computer Science

*Department of Cybernetics, Faculty of Electrical Engineering*

Minor: Mathematics

Thesis: Playing General Imperfect-Information Games Using Game-Theoretic Algorithms

**Czech Technical University**

2011 – 2014

## APPOINTMENTS

### Postdoctoral Research Scientist

*Department of Industrial Engineering and Operations Research*

Funding: United States Department of the Navy, Office of Naval Research

**Columbia University**

08 / 2023 – now

### Research Associate

*Laboratory of Agent Mediated Intelligence*

Funding: Singapore NRF/Industry Alignment Fund Pre-Positioning Programme

**Nanyang Technological University**

10–12 / 2018, 01–06 / 2023

### Research Assistant

*Collaborative Research Alliance: CMU/UTEP/CTU*

Funding: United States Army, Army Research Laboratory

**Czech Technical University**

07 / 2016 – 09 / 2018

## AWARDS AND HONORS

### GameSec'24 Best Paper Award Laureate

*Award for our paper Contested Logistics: A Game-Theoretic Approach*

**Conference on Game Theory and AI for Security**

2024

### A\*STAR SINGA and Merit Awards Laureate

*Fellowship with full tuition coverage and a monthly allowance*

First laureate of the Merit Award in the history of more than 900 awardees

**Singaporean Agency for Science, Technology and Research**

2019–2023

### Cisco Outstanding Thesis Award Laureate

*Award for an exceptional master thesis in the field of cyber-security*

**Cisco Systems**

2016

### ACM Spy Award Nominee

*Master thesis selected as one of the top 10 university-wide*

**Association for Computing Machinery**

2016

### CTU FEE Dean's Awards Laureate and Dean's Lists Honoree

*MSc/BSc studies completed summa cum laude (top 6%/2% school-wide), consistently on Dean's list*

**Czech Technical University**

2012 – 2016

## RESEARCH VISITS AND INTERNSHIPS

### Visiting Research Scholar

*Sigma Laboratory, hosted by Prof. Xu*

Project: Persuading short-sighted Bayesian actors in partially observable sequential interactions.

University of Chicago

09 – 12 / 2022

### Research Intern

*AI Research Laboratory, hosted by Dr. Somol*

Project: Discovering human-centered explainable attack strategies in computer attacks behavioral data.

Gen Digital (NortonLifeLock + Avast Software)

02 – 06 / 2021

### Visiting Researcher

*Adelphi Laboratory Center, hosted by Dr. Colbert and Dr. Ben-Asher*

Project: Computing defender strategies against behavioral learning models of attackers in computer networks.

US Army Research Laboratory

06 / 2018

### Visiting Researcher

*Dynamic Decision Making Laboratory, hosted by Prof. Gonzalez*

Project: Modeling cyber security honeypot scenarios via game theory.

Carnegie Mellon University

06 / 2017

### Visiting Researcher

*Intelligent Agents and Strategic Reasoning Laboratory, hosted by Prof. Kiekintveld*

Project: Modeling cyber security honeypot scenarios via game theory.

University of Texas at El Paso

06 / 2017

## PUBLICATIONS

### JOURNAL ARTICLES

- [1] *The Dark Triad and Strategic Resource Control in a Competitive Computer Game* (S. Curtis, A. Basak, J. Carre, B. Božanský, J. Černý, N. Ben-Asher, M. Gutierrez, D. Jones and C. Kiekintveld). In *Personality and Individual Differences*. Elsevier, 2020.

### CONFERENCE ARTICLES

- [2] *Spatial Branch-and-Bound for Computing Multiplayer Nash Equilibrium* (J. Černý, S. Das Gupta and C. Kroer). In *Proceedings of Fortieth AAAI Conference on Artificial Intelligence*. AAAI Press, 2026.
- [3] *How Deep Is Your Defense-in-Depth? Hardening Cybersecurity Network Control Against Adaptive Attackers* (C. K. Ling, J. Černý, C. H. Han and C. Kroer). In *Proceedings of Fortieth AAAI Conference on Artificial Intelligence*. AAAI Press, 2026.
- [4] *Colonel Blotto with Battlefield Games* (S. Afouni, J. Černý, C. K. Ling and C. Kroer). In *Proceedings of Fortieth AAAI Conference on Artificial Intelligence*. AAAI Press, 2026.
- [5] *GUARD: Constructing Realistic Two-Player Matrix and Security Games for Benchmarking Game-Theoretic Algorithms* (N. Krever, J. Černý, M. Blanchard and C. Kroer). In *Proceedings of the 2025 Conference on Neural Information Processing Systems. Datasets and Benchmarks Track*. Spotlight. Curran Associates, 2025.
- [6] *Contested Route Planning* (J. Černý, G. Iyengar and C. Kroer). In *Proceedings of the 2025 Conference on Decision and Game Theory for Security*. Springer, 2025.
- [7] *Commitment to Sparse Strategies in Two-Player Games* (S. Afouni, J. Černý, C. K. Ling and C. Kroer). In *Proceedings of Thirty-Ninth AAAI Conference on Artificial Intelligence*. AAAI Press, 2025.
- [8] *Contested Logistics: A Game-Theoretic Approach* (J. Černý, C. K. Ling, D. Chakrabarti, J. Zhang, G. Farina, C. Kroer and G. Iyengar). In *Proceedings of the 2024 Conference on Decision and Game Theory for Security*. Springer, 2024.
- [9] *Layred Graph Security Games* (J. Černý, C. K. Ling, C. Kroer and G. Iyengar). In *Proceedings of the Thirty-Third International Joint Conference on Artificial Intelligence*. IJCAI Press, 2024.
- [10] *Generalist Pursuer for Pursuit-Evasion Problems* (P. Li, S. Li, X. Wang, J. Černý, Y. Zhang, S. McAleer, H. Chan and B. An). In *Proceedings of 23rd International Conference on Autonomous Agents and Multiagent Systems*. IFAAMAS, 2024.
- [11] *Reducing Optimism Bias in Incomplete Cooperative Games* (F. Úradník, D. Sychrovský, J. Černý and M. Černý). In *Proceedings of 23rd International Conference on Autonomous Agents and Multiagent Systems*. IFAAMAS, 2024.
- [12] *Price of Anarchy in a Double-Sided Critical Goods Distribution System* (D. Sychrovský, J. Černý, S. Lichau and M. Loeb). In *Proceedings of 22nd International Conference on Autonomous Agents and Multiagent Systems*. IFAAMAS, 2023.
- [13] *Solving Pursuit-Evasion Games Using Pre-Trained Strategies* (S. Li, X. Wang, Y. Zhang, H. Chan, J. Černý and B. An). In *Proceedings of 37th AAAI Conference on Artificial Intelligence*. AAAI Press, 2023.

- [14] *Quantal Correlated Equilibrium in Normal Form Games* (**J. Černý**, B. An and A. N. Zhang). In Proceedings of the 2022 ACM Conference on Economics and Computation. ACM, 2022.
- [15] *Computing Quantal Stackelberg Equilibrium in Extensive-Form Games* (**J. Černý**, V. Lisý, B. Bošanský and B. An). In Proceedings of 35th AAAI Conference on Artificial Intelligence. AAAI Press, 2021.
- [16] *Computing Ex Ante Coordinated Team-Maxmin Equilibria in Zero-Sum Multiplayer Extensive-Form Games* (Y. Zhang, B. An and **J. Černý**). In Proceedings of 35th AAAI Conference on Artificial Intelligence. AAAI Press, 2021.
- [17] *Complexity and Algorithms for Exploiting Quantal Opponents in Large Two-Player Games* (D. Milec, **J. Černý**, V. Lisý and B. An). In Proceedings of 35th AAAI Conference on Artificial Intelligence. AAAI Press, 2021.
- [18] *Dinkelbach-Type Algorithm for Computing Quantal Stackelberg Equilibrium* (**J. Černý**, V. Lisý, B. Bošanský and B. An). In Proceedings of the 29th International Joint Conference on Artificial Intelligence. IJCAI Press, 2020.
- [19] *Finite State Machines Play Extensive-Form Games* (**J. Černý**, B. Bošanský and B. An). In Proceedings of the 2020 ACM Conference on Economics and Computation. ACM, 2020.
- [20] *Evaluating Models of Human Behavior in an Adversarial Multi-Armed Bandit Problem* (M. Gutierrez, **J. Černý**, N. Ben-Asher, E. Aharonov-Majar, A. Basak, B. Bošanský, C. Kiekintveld and C. Gonzalez). In Proceedings of the 41th Annual Meeting of the Cognitive Science Society, 2019.
- [21] *Incremental Strategy Generation for Stackelberg Equilibria in Extensive Form Games* (**J. Černý**, B. Bošanský and C. Kiekintveld). In Proceedings of the 2018 ACM Conference on Economics and Computation. ACM, 2018.
- [22] *An Initial Study of Targeted Personality Models in the FlipIt Game* (A. Basak, **J. Černý**, M. Gutierrez, S. Curtis, C. Kamboua, D. Jones, B. Bošanský and C. Kiekintveld). In Proceedings of the 2018 Conference on Decision and Game Theory for Security, 2018.

#### ARXIV PREPRINTS

- [23] *Unified Perspective on Deep Equilibrium Finding* (X. Wang, **J. Černý**, S. Li, Z. Yin, H. Chan and B. An).
- [24] *Offline Equilibrium Finding* (S. Li, X. Wang, **J. Černý**, Y. Zhang, H. Chan and B. An).
- [25] *Critical Good Distribution System* (**J. Černý**, A. Jedličková, M. Loebl and D. Sychrovský).

## EXTERNALLY FUNDED RESEARCH PROJECTS

### United States Department of the Navy, Office of Naval Research

PIs: C. Kroer, G. Iyengar

*Red Team/Blue Team Games with Contingency Planning and Adversarial Team Games*

Total funding: \$1,226,862.00

Role: Postdoctoral Research Scientist at Columbia University

### United States Army, Army Research Laboratory

PIs: C. Kiekintveld, D. Jones, B. Bošanský, N. Cristin

*Defeating the Dark Triad in Cyber-security Using Game Theory*

Total funding: \$1,350,000.00

Role: Research Assistant at Czech Technical University

## TEACHING EXPERIENCE

### Co-Lecturer in Algorithmic Game Theory and Mechanism Design

Columbia University

*Department of Industrial Engineering and Operations Research*

09 – 12 / 2025

Co-lectured the AGT&MD course with Christian Kroer.

### Invited Lecturer in Machine Learning for Operations Research

Columbia University

*Department of Industrial Engineering and Operations Research*

05 & 11 / 2025

Invited lectures on unsupervised ML.

### Teaching Assistant in Parallel and Distributed Computing

Czech Technical University

*Department of Computer Science*

02 – 05 / 2018

Collaborated in crafting tutorials for a new course, contributing to the creation of assignments and implementing automated assessments.

## COMMUNITY SERVICE

**Grant Proposal Reviewer:** Czech Science Foundation

**Journal Submissions Reviewer:** Games and Economic Behavior; Journal of Artificial Intelligence Research; Artificial Intelligence; Autonomous Agents and Multi-Agent Systems; Dynamic Games and Applications

CONFERENCE ORGANIZATION AND REVIEWING

**Senior Program Committee Member:** AAAI '26

**Program Committee Member:** AAMAS; AAAI; DAI; EC; GameSec; ICLR; ICML; IJCAI; NeurIPS; WINE

**Session Chair:** GameSec '24