

DJORDJE ZIKELIC (ĐORĐE ŽIKELIĆ)

PERSONAL INFORMATION

Address: Am Campus 1, 3400 Klosterneuburg, Austria

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EDUCATION

Institute of Science and Technology Austria (ISTA)

2018 - Present

Ph.D. in Computer Science

Advisors: Krishnendu Chatterjee, Petr Novotný

Research Interests: Verification, Static program analysis, Neural network verification, Safe reinforcement learning, Probabilistic programming, Game theory

University of Cambridge, UK

2014 - 2018

Mathematical Tripos, Gonville & Caius College

Bachelor of Arts (BA) and Master of Mathematics (MMath)

Part III essay: *Lagrangians of Hypergraphs*, supervised by Imre Leader

Mathematical Grammar School, Belgrade, Serbia

2010 - 2014

INTERNSHIPS

Amazon, UK (virtual)

October 2020 - January 2021

Position: Applied Science Intern

Project: Differential cost analysis in programs (PLDI 2022)

Programming: Python, OCaml

University of Cambridge, UK

July 2017 - September 2017

Position: Research Intern

Supervisor: Alexei Kovalev

Project: Aspects of Morse Theory (study of topics in differential geometry and algebraic topology)

Institute of Science and Technology Austria (ISTA)

June 2016 - September 2016

Position: Research Intern

Supervisor: Krishnendu Chatterjee, Petr Novotný

Project: Safety analysis in probabilistic programs (POPL 2017), planning under uncertainty (AAAI 2017)

Programming: Matlab

PUBLICATIONS

9 out of 11 conference publications accepted at premier venues according to CSRankings

* equal contribution, † authors ordered alphabetically

1. *Learning Control Policies for Stochastic Systems with Reach-avoid Guarantees.*
Đorđe Žikelić*, Mathias Lechner*, Krishnendu Chatterjee, Thomas A. Henzinger.
Submitted.
2. *Bidding Graph Games with Partially-Observable Budgets.*
Guy Avni, Ismaël Jecker, Đorđe Žikelić†.
Submitted.
3. *Sound and Complete Certificates for Quantitative Termination Analysis of Probabilistic Programs.*
Krishnendu Chatterjee, Amir Kafshdar Goharshady, Tobias Meggendorfer, Đorđe Žikelić†.
34th International Conference on Computer Aided Verification (**CAV 2022**)
4. *Learning Stabilizing Policies in Stochastic Control Systems.*
Đorđe Žikelić*, Mathias Lechner*, Krishnendu Chatterjee, Thomas A. Henzinger.
ICLR 2022 Workshop on Socially Responsible Machine Learning (**ICLRSRML 2022**)
5. *Differential Cost Analysis with Simultaneous Potentials and Anti-potentials.*
Đorđe Žikelić, Bor-Yuh Evan Chang, Pauline Bolognani, Franco Raimondi.
44th ACM SIGPLAN Conference on Programming Language Design and Implementation (**PLDI 2022**)

6. *Stability Verification in Stochastic Control Systems via Neural Network Supermartingales.*
Mathias Lechner*, Đorđe Žikelić*, Krishnendu Chatterjee, Thomas A. Henzinger.
36th AAAI Conference on Artificial Intelligence (**AAAI 2022**), **oral presentation**
7. *Infinite Time Horizon Safety of Bayesian Neural Networks.*
Mathias Lechner*, Đorđe Žikelić*, Krishnendu Chatterjee, Thomas A. Henzinger.
35th Conference on Neural Information Processing Systems (**NeurIPS 2021**)
8. *On Lexicographic Proof Rules for Probabilistic Termination.*
Krishnendu Chatterjee, Ehsan Kafshdar Goharshady, Petr Novotný, Jiří Závěručky, Đorđe Žikelić†.
24th International Symposium on Formal Methods (**FM 2021**)
9. *Proving Non-termination by Program Reversal.*
Krishnendu Chatterjee, Ehsan Kafshdar Goharshady, Petr Novotný, Đorđe Žikelić†.
43rd ACM SIGPLAN Conference on Programming Language Design and Implementation (**PLDI 2021**)
10. *Scalable Verification of Quantized Neural Networks.*
Thomas A. Henzinger, Mathias Lechner, Đorđe Žikelić†.
35th AAAI Conference on Artificial Intelligence (**AAAI 2021**)
11. *Infinite-Duration All-Pay Bidding Games.*
Guy Avni, Ismaël Jecker, Đorđe Žikelić†.
ACM-SIAM Symposium on Discrete Algorithms (**SODA 2021**)
12. *Bidding Mechanisms in Graph Games.*
Guy Avni, Thomas A. Henzinger, Đorđe Žikelić†.
44th International Symposium on Mathematical Foundations of Computer Science (**MFCS, 2019**)
Journal version in Journal of Computer and System Sciences (**JCSS, 2021**)
13. *Optimizing Expectation with Guarantees in POMDPs.*
Krishnendu Chatterjee, Petr Novotný, Guillermo A. Perez, Jean-Francois Raskin, Đorđe Žikelić†.
31st AAAI Conference on Artificial Intelligence (**AAAI, 2017**)
14. *Stochastic invariants for probabilistic termination.*
Krishnendu Chatterjee, Petr Novotný, Đorđe Žikelić†.
44th ACM SIGPLAN Symposium on Principles of Programming Languages (**POPL, 2017**)
15. *Theorems about quadrilaterals and conics.*
Đorđe Baralić, Branko Grbić, Đorđe Žikelić†.
International Journal of Computer Mathematics 91 (7) (**Int. J. Comput. Math., 2014**)

HONOURS AND AWARDS

Meta PhD Research Fellowship - finalist 2022
Shortlisted as one of the 4 finalists for the programming languages category.

Gonville & Caius College Scholarship and Cambridge Trust Scholarship 2014-2018
Full university fees, tuition fees, and maintenance costs.

Stephen Hawking Fund Award October, 2017
Awarded by Gonville & Caius College, Cambridge to mathematics students proceeding to Part III.

Scholar of the Gonville & Caius College, Cambridge June 2015, 2016
High performance in the examinations of the Mathematical Tripos.

International High School Olympiads 2010-2014
Participated in international high school olympiads in mathematics, physics, and astronomy. Most notable results:

- International Olympiad in Astronomy and Astrophysics (IOAA) 2014 (bronze medal)
- International Mathematical Competition Arhimede 2013 (gold medal), 2012 (silver medal)
- International Junior Science Olympiad (IJSO) 2010 (bronze medal)
- International Astronomy Olympiad (IAO) 2010 (bronze medal)

National High School Competitions 2010-2014

- Serbian Mathematical Olympiad: second prize in 2014, third prize on 2013, 2012
- Mathematics (national): **first overall** in my year in 2014, 2012, 2010, **second overall** in 2013
- Physics (national): first prize in 2013, second prize in 2012, 2011, third prize in 2014
- Astronomy (national): second prize in 2014, 2012

TEACHING

Teaching at ISTA:

- Computer Science Track Core Course, TA for Spring 2021.
- Formal Methods, TA for Spring 2020.
- Computer Science Track Core Course, TA for Spring 2020.
- Mathematics Track Core Course, Spring 2019, 4 lectures on Brownian motion and aspects of probability.

Prior to enrolling university, I taught in several preparation classes for mathematical olympiads at the Mathematical High School, Belgrade, as well as at the Mathematical Society "Arhimedes", Belgrade.

CONFERENCE AND INVITED TALKS

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| • AAI 2022, virtual (recorded talk and poster) | February 2022 |
| • NeurIPS 2021, virtual (recorded talk and poster) | December 2021 |
| • ISTA/FORSYTE joint seminar, virtual | December 2021 |
| • FM 2021, virtual (talk) | November 2021 |
| • PLDI 2021, virtual (recorded talk and poster) | June 2021 |
| • Infer Practitioners Workshop (co-located with PLDI 2021), virtual | June 2021 |
| • ISTA/FORSYTE joint seminar, virtual | May 2021 |
| • AAI 2021, virtual (poster) | January 2021 |
| • Mathematical Institute of the Serbian Academy of Science and Arts, Belgrade, Serbia | December 2019 |
| • MFCS 2019, Aachen, Germany (talk) | August 2019 |

SERVICE

- Reviewer: FoSSaCS 2022, AAMAS 2022, ICML 2022
- Artifact Evaluation Committee: CAV 2022

PROFESSIONAL SKILLS

- Python, C++
- Serbian (native), English (fluent), German (elementary)

PERSONAL SKILLS AND INTERESTS

Strong analytical skills (developed through research and degree activities, maths competitions), hard working
Good organizing skills, value teamwork:

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|----------------------------------------------------------------|-----------|
| • Co-organized Young Scientist Symposium 2019 at ISTA | May, 2019 |
| • President of the Cambridge University Serbian Society | 2017-2018 |

Hobbies and interests: History, travelling, sports (football and tennis), politics, gaming, D&D

REFERENCES

Krishnendu Chatterjee

Institute of Science and Technology Austria (ISTA)
krishnendu.chatterjee@ist.ac.at

Petr Novotný

Masaryk University, Czech Republic
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Bor-Yuh Evan Chang

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Thomas A. Henzinger

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