

DJORDJE ZIKELIC (ĐORĐE ŽIKELIĆ)

PERSONAL INFORMATION

Address: Am Campus 1, 3400 Klosterneuburg, Austria

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EDUCATION

Institute of Science and Technology (IST) Austria

2018 - Present

Ph.D. in Computer Science

Advisor: Krishnendu Chatterjee

Co-advisor: Petr Novotný, Masaryk University, Czech Republic

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

Supervisor: Pauline Bolignano, Bor-Yuh Evan Chang

Project: Differential cost analysis in programs (results under submission)

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 (IST) Austria

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

* 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. *Sound and Complete Certificates for Quantitative Termination Analysis of Probabilistic Programs.*
Krishnendu Chatterjee, Amir Kafshdar Goharshady, Tobias Meggendorfer, Đorđe Žikelić†.
Submitted.
3. *Differential Cost Analysis with Simultaneous Potentials and Anti-potentials.*
Đorđe Žikelić, Pauline Bolignano, Bor-Yuh Evan Chang, Franco Raimondi.
Submitted.
4. *Stability Verification in Stochastic Control Systems via Neural Network Supermartingales.*
Mathias Lechner*, Đorđe Žikelić*, Krishnendu Chatterjee, Thomas A. Henzinger.
To appear in the 36th AAAI Conference on Artificial Intelligence (**AAAI 2022**)
5. *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**)

6. *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**)
7. *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**)
8. *Scalable Verification of Quantized Neural Networks.*
Thomas A. Henzinger, Mathias Lechner, Đorđe Žikelić[†].
35th AAAI Conference on Artificial Intelligence (**AAAI 2021**)
9. *Infinite-Duration All-Pay Bidding Games.*
Guy Avni, Ismaël Jecker, Đorđe Žikelić[†].
ACM-SIAM Symposium on Discrete Algorithms (**SODA 2021**)
10. *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**)
11. *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**)
12. *Stochastic invariants for probabilistic termination.*
Krishnendu Chatterjee, Petr Novotný, Đorđe Žikelić[†].
44th ACM SIGPLAN Symposium on Principles of Programming Languages (**POPL, 2017**)
13. *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.

Marie Skłodowska-Curie Fellowship 2018 - 2020
Awarded to best candidates for the IST Austria PhD program.

Gonville & Caius College Scholarship and Cambridge Trust Scholarhip 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)
- International Mathematical Olympiad (IMO) 2014 (first reserve for the Serbian team)

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

SUPERVISION AND TEACHING

Supervision of interns and students at IST Austria:

- Roodabeh Safavi (Sharif University of Technology, Iran) spring 2022.
- Martin Ansari pour (Sharif University of Technology, Iran), winter-spring 2022.
- Mehrdad Karrabi (PhD student at IST Austria), autumn 2021.
- Ehsan Kafshdar Goharshady (Ferdowsi University of Mashhad, Iran), summer 2019.

Teaching at IST Austria:

- 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

• NeurIPS 2021, virtual (recorded talk and poster)	December 2021
• IST/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
• IST/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

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

PROFESSIONAL SKILLS

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- 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:

- Co-organized **Young Scientist Symposium 2019** at IST Austria 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 (IST) Austria krishnendu.chatterjee@ist.ac.at	Thomas A. Henzinger Institute of Science and Technology (IST) Austria tah@ist.ac.at
Petr Novotný Masaryk University, Czech Republic petr.novotny@fi.muni.cz	Pauline Bolignano Amazon pln@amazon.co.uk
Bor-Yuh Evan Chang University of Colorado Boulder & Amazon byec@amazon.com	