# Dimitrios Myrisiotis

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## Research interests

My main research interests lie around computational complexity theory and theoretical machine learning.

## Professional experience

2023– **Research Fellow.**
CNRS@CREATE.
Research areas: Computational complexity theory, reinforcement learning.
Hosts: Arnab Bhattacharyya, Silviu Maniu.

2021–2023 **Research Fellow in Computer Science.**
National University of Singapore (NUS),
School of Computing.
Research areas: Computational complexity theory, computational learning theory, and causality.
Host: Arnab Bhattacharyya.

## Education

2017–2021 **Ph.D. in Computing.**
Imperial College London,
Department of Computing.
Research area: Computational complexity theory.
Thesis: *The complexity and applications of circuit minimization.*
Advisor: Mahdi Cheraghchi.
Thesis Committee: Iain Phillips, Rahul Santhanam, and Iddo Tzameret.

2013–2016 **M.Sc. in Logic and the Theory of Algorithms and Computation (MPLA).**
National and Kapodistrian University of Athens (UoA),
Department of Mathematics.
GPA: 9.85 out of 10.00.
Thesis: *Quantum complexity, relativized worlds, and oracle separations.*
Advisor: Efstathios (Stathis) Zachos. Thesis Committee: Dimitrios Fotakis, Iordanis Kerenidis, Aristeidis Pagourtzis, and Efstathios (Stathis) Zachos.

2007–2013 **B.Sc.-M.Sc. joint degree in Mechanical Engineering.**
National Technical University of Athens (NTUA),
School of Mechanical Engineering.
Thesis: *Parametric study of the gaits of a quadruped robot using Hildebrand diagrams.*
Advisor: Evangelos Papadopoulos.

# Publications

## Preprints

5. Philips George John, Arnab Bhattacharyya, Silviu Maniu, Dimitrios Myrisiotis, and Zhenan Wu. Efficient, low-regret, online reinforcement learning for linear MDPs. In submission, 2024

4. Arnab Bhattacharyya, Sutanu Gayen, Kuldeep S. Meel, Dimitrios Myrisiotis, A. Pavan, and N. V. Vinodchandran. Computational explorations of total variation distance. In submission, 2024

3. Arnab Bhattacharyya, Sutanu Gayen, Kuldeep S. Meel, Dimitrios Myrisiotis, A. Pavan, and N. V. Vinodchandran. Estimating statistical similarity between product distributions. In submission, 2024

2. Arnab Bhattacharyya, Sutanu Gayen, Kuldeep S. Meel, Dimitrios Myrisiotis, A. Pavan, and N. V. Vinodchandran. Total variation distance for product distributions is #P-complete. *CoRR*, abs/2405.08255, 2024

1. Arnab Bhattacharyya, Davin Choo, Sutanu Gayen, and Dimitrios Myrisiotis. Learnability of parameter-bounded Bayes nets. *CoRR*, abs/2407.00927, 2024.

## Journals

3. Mahdi Cheraghchi, Shuichi Hirahara, Dimitrios Myrisiotis, and Yuichi Yoshida. One-tape turing machine and branching program lower bounds for MCSP. *Theory Comput. Syst.*, 68(4):868–899, 2024.

2. Valentine Kabanets, Sajin Koroth, Zhenjian Lu, Dimitrios Myrisiotis, and Igor Carboni Oliveira. Algorithms and lower bounds for De Morgan formulas of low-communication leaf gates. *ACM Trans. Comput. Theory*, 13(4):23:1–23:37, 2021.

1. Mahdi Cheraghchi, Valentine Kabanets, Zhenjian Lu, and Dimitrios Myrisiotis. Circuit lower bounds for MCSP from local pseudorandom generators. *ACM Trans. Comput. Theory*, 12(3):21:1–21:27, 2020.

## Conference Papers

8. Arnab Bhattacharyya, Sutanu Gayen, Kuldeep S. Meel, Dimitrios Myrisiotis, A. Pavan, and N. V. Vinodchandran. Total variation distance meets probabilistic inference. In *Forty-first International Conference on Machine Learning, ICML 2024, Vienna, Austria, July 21-27, 2024*. OpenReview.net, 2024.

7. Arnab Bhattacharyya, Sutanu Gayen, Kuldeep S. Meel, Dimitrios Myrisiotis, A. Pavan, and N. V. Vinodchandran. On approximating total variation distance. In *Proceedings of the Thirty-Second International Joint Conference on Artificial Intelligence, IJCAI 2023, 19th-25th August 2023, Macao, SAR, China*, pages 3479–3487. ijcai.org, 2023.

6. Eric Allender, Mahdi Cheraghchi, Dimitrios Myrisiotis, Harsha Tirumala, and Ilya Volkovich. One-way functions and a conditional variant of MKTP. In Mikolaj Bojanczyk and Chandra Chekuri, editors, *41st IARCS Annual Conference on Foundations of Software Technology*

*and Theoretical Computer Science, FSTTCS 2021, December 15-17, 2021, Virtual Conference*, volume 213 of *LIPIcs*, pages 7:1–7:19. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2021.

5. Mahdi Cheraghchi, Shuichi Hirahara, Dimitrios Myrisiotis, and Yuichi Yoshida. One-tape Turing machine and branching program lower bounds for MCSP. In Markus Bläser and Benjamin Monmege, editors, *38th International Symposium on Theoretical Aspects of Computer Science, STACS 2021, March 16-19, 2021, Saarbrücken, Germany (Virtual Conference)*, volume 187 of *LIPIcs*, pages 23:1–23:19. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2021.

4. Valentine Kabanets, Sajin Koroth, Zhenjian Lu, Dimitrios Myrisiotis, and Igor Oliveira. Algorithms and lower bounds for De Morgan formulas of low-communication leaf gates. In Shubhangi Saraf, editor, *35th Computational Complexity Conference, CCC 2020, July 28-31, 2020, Saarbrücken, Germany (Virtual Conference)*, volume 169 of *LIPIcs*, pages 15:1–15:41. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2020.

3. Mahdi Cheraghchi, Valentine Kabanets, Zhenjian Lu, and Dimitrios Myrisiotis. Circuit lower bounds for MCSP from local pseudorandom generators. In Christel Baier, Ioannis Chatzigiannakis, Paola Flocchini, and Stefano Leonardi, editors, *46th International Colloquium on Automata, Languages, and Programming, ICALP 2019, July 9-12, 2019, Patras, Greece*, volume 132 of *LIPIcs*, pages 39:1–39:14. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2019.

2. Dimitrios Myrisiotis, Ioannis Poulakakis, and Evangelos Papadopoulos. On the effects of design parameters on quadruped robot gaits. In *2015 IEEE International Conference on Robotics and Biomimetics, ROBIO 2015, Zhuhai, China, December 6-9, 2015*, pages 1072–1077. IEEE, 2015.

1. Ioannis Kontolatis, Dimitrios Myrisiotis, Iosif Paraskevas, Evangelos Papadopoulos, Guido de Croon, and Dario Izzo. Quadruped optimum gaits analysis for planetary exploration. In *13th Symposium on Advanced Space Technologies in Robotics and Automation, ASTRA 2013, Noordwijk, The Netherlands, May 15-17, 2013*. ESA, ESTEC, 2013.

## Research Visits

2022 Department of EECS, University of Michigan, Ann Arbor, MI, USA. Hosted by Prof. Mahdi Cheraghchi.

2022 *Causality* program, Simons Institute for the Theory of Computing, University of California, Berkeley, CA, USA.

2021 Department of EECS, University of Michigan, Ann Arbor, MI, USA. Hosted by Prof. Mahdi Cheraghchi.

2020 Department of Computer Science, School of Arts and Sciences, Rutgers University, Piscataway, NJ, USA. Hosted by Prof. Eric Allender.

2020 Department of EECS, University of Michigan, Ann Arbor, MI, USA. Hosted by Prof. Mahdi Cheraghchi.

2019 National Institute of Informatics (NII), Tokyo, Japan. Hosted by Prof. Yuichi Yoshida.

2018 School of Computing Science, Simon Fraser University (SFU), Burnaby, BC, Canada. Hosted by Prof. Valentine Kabanets.

## Workshops

2024 ICML 2024 Workshop on Structured Probabilistic Inference & Generative Modeling (July 26).

2022 DIMACS Workshop on Meta-Complexity, Barriers, and Derandomization (April 25 – April 27).

## Awards or Distinctions

2018 *Student Academic Choice Awards (SACA) Nominee*, by the Department of Computing, Imperial College London.

2016 *Highest GPA among the graduates of my MSc program (December 2016).*

2007 *The Great Moment for Education*, by Eurobank EFG.

2007 *Prize in the Memory of the Prefecture-Counselor Charalampos Amanatidis*, by the Prefecture of Eastern Attica.

2007 *Prize in the Memory of Daras-Panagiotis Grammatikopoulos*, by Daras-Panagiotis Grammatikopoulos's family.

## Voluntary Service

2013–2014 Tutored university or highschool students in courses related to mathematics.

## Teaching Experience

- Graduate teaching assistant at the Department of Computing, Imperial College London:
  - *Discrete Mathematics* (CO142), Autumn 2019 and Autumn 2020. Instructor: Steffen van Bakel.
  - *Complexity* (CO438), Autumn 2019 and Autumn 2020. Instructor: Iain Phillips.
  - *Algorithms II* (CO202), Autumn 2018. Instructor: Mahdi Cheraghchi.
  - *Graphs and Algorithms* (CO150), Spring 2018. Instructor: Iain Phillips.
  - *Quantum Computing* (CO484), Autumn 2017. Instructors: Mahdi Cheraghchi and Herbert Wiklicky.

## Community Service

- Reviewer for
  - ISIT, BioRob, CSR, CCC, ISAAC, ICALP, FOCS, STACS, STOC, NeurIPS, SODA, ICLR, SIAM Journal on Computing, and Theory of Computing.

- Program Committee member of
  - UAI 2021.
- Co-organizer of the
  - NUS School of Computing Algo-Theory Seminar (2022–2023, 2023–2024).

## Programming

- Python, FORTRAN, and C.
- LeetCode profile: `https://leetcode.com/u/dimyrisiotis/`.

## Army Service

2016–2017 In Greece, there is a *compulsory* nine-month military service for all male citizens.

## References


- Eric Allender,
  Distinguished Professor Emeritus;
  Department of Computer Science,
  Rutgers, the State University of NJ;
  `allender@cs.rutgers.edu`.
- Arnab Bhattacharyya,
  Associate Professor;
  School of Computing,
  National University of Singapore;
  `arnabb@nus.edu.sg`.
- Mahdi Cheraghchi,
  Associate Professor;
  Department of EECS,
  University of Michigan, Ann Arbor;
  `mahdich@umich.edu`.
- Valentine Kabanets,
  Professor;
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