Associate Professor

Centre for Discrete Mathematics and Its Applications (DIMAP)

Department of Computer Science

University of Warwick, UK

Igor Carboni Oliveira

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https://www.dcs.warwick.ac.uk/∼igorcarb/

Curriculum Vitae

July 2025

Contents

Research Interests

Computational Complexity and its connections to **Algorithms**, **Combinatorics**, and **Logic**.

Areas of interest include computational learning theory, cryptography, computational pseudorandomness and its applications, circuit complexity, communication complexity, proof complexity, Kolmogorov complexity, and the logical foundations of complexity theory.

Employment and Education

Current Position

University of Warwick – Department of Computer Science
Associate Professor, 2023 - Present.
Assistant Professor, 2019 - 2023.

Previous Positions

Program Organizer and Visiting Scientist (Program: "Meta-Complexity")
Simons Institute for the Theory of Computing (UC Berkeley).
Period: Spring 2023.

Research Fellow (Program: "Lower Bounds in Computational Complexity")
Simons Institute for the Theory of Computing (UC Berkeley).
Period: Fall 2018.
Mentored by Prof. Ryan Williams.

Researcher (Algorithms and Complexity Theory Group)
Department of Computer Science, University of Oxford.
Period: 2017 - 2019.
Hosted by Prof. Rahul Santhanam.

Postdoctoral Fellow (Mathematics)
Faculty of Mathematics and Physics, Charles University in Prague.
Period: 2015 - 2016.
Hosted by Prof. Jan Krajíček.

Education

Ph.D. in Computer Science (Area: Theory of Computation)
Department of Computer Science, Columbia University.
Thesis: "Unconditional Lower Bounds in Complexity Theory".
Advisors: Prof. Rocco Servedio and Prof. Tal Malkin.
Date: June 2015.

Bachelor & Master of Science in Computer Science
Institute of Computing, University of Campinas, Brazil.
Thesis: "Computational Complexity and the P versus NP Problem".
MSc Supervisor: Prof. Arnaldo V. Moura (Complexity).
UG Supervisors: Prof. Orlando Lee (Combinatorics) and Prof. Walter A. Carnielli (Logic).
Date: August 2010.

Funding and Awards

2023–2028: ERC Starting Grant (SYCLE). PI. **Total:** 1,486,000 EUR. [SYCLE Website]

2022: Royal Society Enhanced Research Expenses. PI. **Total:** 263,000 GBP.

2021–2023: EPSRC New Horizons Grant (Warwick/Oxford). Co-PI. **Total:** 200,000 GBP.

2019–2024: Royal Society University Research Fellowship. PI. **Total:** 773,000 GBP.

2019–2023: Imperial College London Research Fellowship (declined).

Fall/2018: Simons Institute for the Theory of Computing (UC Berkeley) Research Fellowship.

2018: Best Paper Award at LATIN'18 (Latin American Theoretical Informatics).

2015–2017: Postdoctoral Fellowship (Institute of Mathematics, Charles University in Prague).

2013: Short-Term Fellowship at IDC FACT Center (Herzliya, Israel).

2010: IMPA Summer Scholarship, Rio de Janeiro/Brazil.

2009: FAPESP Fellowship (Master of Science), São Paulo/Brazil.

2009: Brazilian Computer Society Prize (distinguished undergraduate performance).

2009: Euler Prize, Institute of Computing, Unicamp (distinguished undergraduate performance).

Academic Visits and Internships

- **Universitat Politecnica de Catalunya** (Barcelona).
  Host: Prof. Albert Atserias – May 2018.
- **Mathematical Institute of the Czech Academy of Sciences** (Czech Republic).
  Period: November 2017.
- **KTH Royal Institute of Technology** (Sweden).
  Host: Prof. Jakob Nordstrom – March 2017.
- **Kurt Gödel Research Center** (Austria).
  Host: Dr. Ján Pich – January 2017.
- **University of Oxford** (UK).
  Host: Prof. Rahul Santhanam – April 2016.
- **The Chinese University of Hong Kong** (China).
  Host: Prof. Andrej Bogdanov – October 2014.
- **University of Edinburgh** (UK).
  Host: Prof. Rahul Santhanam – May 2014.
- **IDC Herzliya - FACT Center** (Israel).
  Host: Prof. Alon Rosen – November, December 2013.
- **University of São Paulo** (Brazil).
  Host: Prof. Yoshiharu Kohayakawa – June to August 2012.

- **IMPA – Instituto Nacional de Matemática Pura e Aplicada** (Brazil).
  Period: January to February 2010.
- **Complutense University of Madrid** (Spain).
  Period: September to December 2006.

Organization of Research Programs, Workshops, and Seminars

Research Program "Logical Foundations of Complexity Theory"
Isaac Newton Institute for Mathematical Sciences (University of Cambridge), Fall 2026.

Co-organized with Sam Buss, Jan Krajíček, Nutan Limaye, Toni Pitassi, Rahul Santhanam, and Iddo Tzameret.

Workshop "Frontiers in Complexity Lower Bounds"
Isaac Newton Institute for Mathematical Sciences (University of Cambridge), September 2026.

Co-organized with Nutan Limaye and Rahul Santhanam.

2nd Warwick Algorithms & Complexity Workshop
Department of Computer Science, University of Warwick, September 2025.

Co-organized with Sayan Bhattacharya and Artur Czumaj.

1st Warwick Algorithms & Complexity Workshop
Department of Computer Science, University of Warwick, September 2024.

Co-organized with Sayan Bhattacharya and Artur Czumaj.

FOCS Workshop "Recent Developments in Explicit Constructions"
64th IEEE Symposium on Foundations of Computer Science (FOCS), November 2023.

Co-organized with Lijie Chen and Rahul Santhanam.

Research Program "Meta-Complexity"
Simons Institute for the Theory of Computing (UC Berkeley), Spring 2023.

Co-organized with Valentine Kabanets, Rafael Pass, Toni Pitassi, and Rahul Santhanam.

Workshop "Lower Bounds, Learning and Average-Case Complexity"
Simons Institute for the Theory of Computing (UC Berkeley), February 2023.

Co-organized with Russell Impagliazzo and Valentine Kabanets.

Warwick-Imperial-Oxford Complexity Network
Online and Local Events. Running since December 2021.

Co-organized with Bruno Cavalar, Christian Ikenmeyer, Ján Pich, Rahul Santhanam, and Iddo Tzameret.

Online Complexity Seminar
Hosted 50+ talks since June 2020.

Oxford Complexity Day
University of Oxford, July 2018.

Co-organized with Rahul Santhanam.

Research Supervision

Halley Goldberg (**Postdoc**). Funded by a UKRI Guarantee/ERC Grant (January/2025 –).

Zhenjian Lu (**Postdoc**). Funded by NSERC/Royal Society URF (August/2023 to December/2024).
(Next Position: Assistant Professor at University of Victoria, Canada.)

Ian Mertz (**Postdoc**). Funded by a Royal Society URF (October/2022 to September/2024).
(Next Position: Postdoc at Charles University in Prague.)

Shuichi Hirahara (**Postdoc**). Funded by an EPSRC grant (September/2022 to February/2023).
(Previous/Next Position: Associate Professor at the National Institute of Informatics, Japan.)

Zhenjian Lu (**Postdoc**). Funded by a Royal Society URF (April/2020 to March/2022).
(Next Position: Postdoc at the University of Oxford and Research Fellow at UC Berkeley.)

Jinqiao Hu (**Ph.D. Student**). Funded by a UKRI Guarantee/ERC Grant (2024-2028).

Dimitrios Tsintsilidas (**Ph.D. Student**). Funded by a Chancellor's Scholarship (2023-2027).
(Jointly supervised by Christian Ikenmeyer.)

Bruno Pasqualotto Cavalar (**Ph.D. Student**). Funded by a Chancellor's Scholarship (2020-2024).
(Next Position: Postdoc at the University of Oxford.)

Herby Bowden (**MSc. Student**). Computer Science Master of Sciences Program (2021-2022).
(Award for best overall performance in the MSc in Computer Science.)

Ondřej Ježil (**Graduate Research Intern**, Charles University in Prague).
(May/2025 to June/2025).

Jiawei Li (**Graduate Research Intern**, University of Texas at Austin).
(May/2023 to July/2023).

Jingyi Lyu (**Undergraduate Research Intern**, Tsinghua University).
(March/2025 to July/2025).

Jiatu Li (**Undergraduate Research Intern**, Tsinghua University).
(March/2022 to July/2022).
(Next Position: PhD student at MIT.)

Visitors

– Hanlin Ren (University of Oxford). June, 2025.
– Noel Arteche (Lund University and University of Copenhagen). June, 2025.
– Halley Goldberg (Simon Fraser University). April, 2025.
– Zhenjian Lu (University of Victoria). March, 2025.
– Oliver Korten (Columbia University). November, 2024.
– Erfan Khaniki (University of Oxford). November, 2024.
– Petr Chmel (Charles University in Prague). November, 2024.
– Noam Mazor (Tel Aviv University). May, 2024.
– Rahul Santhanam (University of Oxford). December, 2023.

– Hanlin Ren (University of Oxford). November-December, 2023.
– Rahul Ilango (Massachusetts Institute of Technology). July, 2022.
– Ian Mertz (University of Toronto). July, 2022.
– Hanlin Ren (University of Oxford). April, 2022.
– Levente Bodnar (University of Oxford). February, 2022.
– Jan Pich (University of Oxford). September, 2021.
– Lijie Chen (Massachusetts Institute of Technology). March, 2020.
– Rahul Santhanam (University of Oxford). February, 2020.
– Bruno Loff (University of Porto). October, 2019.
– Moritz Muller (Universitat Politecnica de Catalunya). December, 2019.

Publications

– Links to all publications are available at https://www.dcs.warwick.ac.uk/∼igorcarb/
– Online profile and citations: [Google Scholar]
– Authors are listed alphabetically in Theoretical Computer Science (**TCS**).

Remark. Conference publications are typically considered more prestigious than journal publications in **TCS**. The flagship conferences in *Computational Complexity Theory* are **CCC**, **FOCS**, and **STOC**.

Media Coverage: [Quanta Magazine] [Computational Complexity Blog I] [Computational Complexity Blog II] [Computational Complexity Blog III] [Simons Institute I] [Simons Institute II] [Godel's Lost Letter] [Oxford Inspired Research] [Shtetl Optimized I] [Shtetl Optimized II] [CS@Columbia]

[48] **Meta-complexity of nondeterministic Kolmogorov complexity**
Preprint.
[Joint work with J. Hu and Z. Lu] [60 pages]

[47] **Equivalence between coding and complexity lower bounds**
Preprint.
[Joint work with J. Hu and Z. Lu] [32 pages]

[46] **Lower bounds on the overhead of indistinguishability obfuscation**
Preprint.
[Joint work with Z. Lu, N. Mazor, and R. Pass] [50 pages]

[45] **On the unprovability of circuit size bounds in intuitionistic S^1_2.**
Logical Methods in Computer Science (**LMCS**), 2025.
[Joint work with L. Chen and J. Li] [22 pages]

[44] **Meta-mathematics of computational complexity theory**
SIGACT News Complexity Theory Column (**SIGACT News**), 2025.
[28 pages]

[43] **Boolean circuit complexity and two-dimensional cover problems**
ACM Transactions on Computation Theory (**TOCT**), 2025.
[Joint work with B. Cavalar] [24 pages]

[42] **Provability of the circuit size hierarchy and its consequences**
Innovations in Theoretical Computer Science (**ITCS**), 2025.
[Joint work with M. Carmosino, V. Kabanets, A. Kolokolova, and D. Tsintsilidas] [26 pages]

[41] **One-way functions and pKt complexity.**
Theory of Cryptography Conference (**TCC – Special Issue**), 2024.
[Joint work with S. Hirahara and Z. Lu] [45 pages]

[40] **On the complexity of avoiding heavy elements.**
Symposium on Foundations of Computer Science (**FOCS**), 2024.
[Joint work with Z. Lu, H. Ren, and R. Santhanam] [57 pages]

[39] **Reverse mathematics of complexity lower bounds.**
Symposium on Foundations of Computer Science (**FOCS – Special Issue**), 2024.
[Joint work with L. Chen and J. Li] [50 pages]

[38] **Exact search-to-decision reductions for time-bounded Kolmogorov complexity.**
Computational Complexity Conference (**CCC**), 2024.
[Joint work with S. Hirahara, V. Kabanets, and Z. Lu] [59 pages]

[37] **Polynomial-time pseudodeterministic construction of primes.**
Symposium on Foundations of Computer Science (**FOCS**), 2023.
[Joint work with L. Chen, Z. Lu, H. Ren, and R. Santhanam] [48 pages]

[36] **Constant-depth circuits vs. monotone circuits.**
Computational Complexity Conference (**CCC**), 2023.
[Joint work with B. Cavalar] [42 pages]

[35] **Unprovability of strong complexity lower bounds in bounded arithmetic.**
Symposium on Theory of Computing (**STOC**), 2023.
[Joint work with J. Li] [81 pages]

[34] **A duality between one-way functions and average-case symmetry of information.**
Symposium on Theory of Computing (**STOC**), 2023.
[Joint work with S. Hirahara, Z. Lu, R. Ilango, and M. Nanashima] [60 pages]

[33] **Theory and applications of probabilistic Kolmogorov complexity.**
The Computational Complexity Column – Bulletin of EATCS No 137 (**EATCS Bulletin**), 2022.
[Joint work with Z. Lu] [33 pages]

[32] **Probabilistic Kolmogorov complexity with applications to average-case complexity.**
Computational Complexity Conference (**CCC**), 2022.
[Joint work with H. Goldberg, V. Kabanets, and Z. Lu] [60 pages]

[31] **Optimal coding theorems in time-bounded Kolmogorov complexity.**
International Colloquium on Automata, Languages and Programming (**ICALP**), 2022.
[Joint work with Z. Lu and M. Zimand] [35 pages]

[30] **LEARN-uniform circuit lower bounds and provability in bounded arithmetic.**
Symposium on Foundations of Computer Science (**FOCS**), 2021.
[Joint work with M. Carmosino, V. Kabanets, and A. Kolokolova] [65 pages]

[29] **Quantum learning algorithms imply circuit lower bounds.**
Symposium on Foundations of Computer Science (**FOCS**), 2021.
Quantum Information Processing (**QIP**), 2021.
[Joint work with S. Arunachalan, A. Grilo, T. Gur, and A. Sundaram] [73 pages]

[28] **Majority vs. Approximate Linear Sum and average-case complexity below NC1.**

International Colloquium on Automata, Languages and Programming (**ICALP**), 2021.
[Joint work L. Chen, Z. Lu, and X. Lyu] [41 pages]

[27] **An efficient coding theorem via probabilistic representations and its applications.**
International Colloquium on Automata, Languages and Programming (**ICALP**), 2021.
[Joint work with Z. Lu] [37 pages]

[26] **Pseudodeterministic algorithms and the structure of probabilistic time.**
Symposium on Theory of Computing (**STOC**), 2021.
[Joint work with Z. Lu and R. Santhanam] [36 pages]

[25] **Algorithms and lower bounds for formulas of low-communication leaf gates.**
Computational Complexity Conference (**CCC**), 2020.
ACM Trans. Comput. Theory (**ToCT**) 13(4): 23:1-23:37, 2021.
[Joint work with V. Kabanets, S. Koroth, Z. Lu, and D. Myrisiotis] [44 pages]

[24] **NP-hardness of circuit minimization for multi-output functions.**
Computational Complexity Conference (**CCC**), 2020.
[Joint work with R. Ilango and B. Loff] [39 pages]

[23] **Consistency of circuit lower bounds with bounded theories.**
Logical Methods in Computer Science (**LMCS**), Volume 16, Issue 2, 2020.
[Joint work with J. Bydzovsky and J. Krajicek] [17 pages]

[22] **Beyond natural proofs: hardness magnification and locality.**
Innovations in Theoretical Computer Science (**ITCS**), 2020.
Journal of the ACM (**JACM**), 2022.
[Joint work with L. Chen, S. Hirahara, J. Pich, N. Rajgopal, and R. Santhanam] [51 pages]

[21] **Randomness and intractability in Kolmogorov complexity.**
International Colloquium on Automata, Languages and Programming (**ICALP**), 2019.
[15 pages]

[20] **Parity helps to compute Majority.**
Computational Complexity Conference (**CCC**), 2019.
[Joint work with R. Santhanam and S. Srinivasan] [19 pages]

[19] **Hardness magnification near state-of-the-art lower bounds.**
Computational Complexity Conference (**CCC – Special Issue**), 2019.
Theory of Computing (**ToC** – CCC'19 Special Issue), 2021.
[Joint work with J. Pich and R. Santhanam] [33 pages]

[18] **Expander-based cryptography meets natural proofs.**
Innovations in Theoretical Computer Science (**ITCS**), 2019.
Computational Complexity (**CC**) 31(1):4-1:60, 2022.
[Joint work with R. Santhanam and R. Tell] [42 pages]

[17] **Hardness magnification for natural problems.**
Symposium on Foundations of Computer Science (**FOCS**), 2018.
[Joint work with R. Santhanam] [40 pages]

[16] **Pseudo-derandomizing learning and approximation.**
International Workshop on Randomization and Computation (**RANDOM**), 2018.
[Joint work with R. Santhanam] [34 pages]

[15] **NP-hardness of Minimum Circuit Size Problem for OR-AND-MOD circuits.**
Computational Complexity Conference (**CCC**), 2018.
[Joint work with S. Hirahara and R. Santhanam] [33 pages]

[14] **On monotone circuits with local oracles and clique lower bounds.**
Chicago Journal of Theoretical Computer Science (**CJTCS**), 2018.
[Joint work with J. Krajíček] [17 pages]

[13] **An average-case lower bound against ACC^0.**
Latin American Theoretical Informatics Symposium (**LATIN – Best Paper Award**), 2018.
[Joint work with R. Chen and R. Santhanam] [19 pages]

[12] **Conspiracies between learning algorithms, lower bounds, and pseudorandomness.**
Computational Complexity Conference (**CCC**), 2017.
[Joint work with R. Santhanam] [51 pages]

[11] **Pseudodeterministic constructions in subexponential time.**
Symposium on Theory of Computing (**STOC**), 2017.
[Joint work with R. Santhanam] [30 pages]

[10] **Addition is exponentially harder than counting for shallow monotone circuits.**
Symposium on Theory of Computing (**STOC**), 2017.
[Joint work with X. Chen and R. Servedio] [25 pages]

[09] **Unprovability of circuit upper bounds in Cook's theory PV.**
Logical Methods in Computer Science (**LMCS**), Volume 13, Issue 1, 2017.
[Joint work with J. Krajíček] [7 pages]

[08] **Erdős-Ko-Rado for random hypergraphs: asymptotics and stability.**
Combinatorics, Probability and Computing (**CPC**), 26(3), 406–422, 2017
[Joint work with M. Gauy and H. Han] [15 pages]

[07] **Near-optimal small-depth lower bounds for small distance connectivity.**
Symposium on Theory of Computing (**STOC**), 2016.
[Joint work with X. Chen, R. Servedio, and L-Y. Tan] [26 pages]

[06] **An algebraic formulation of the graph reconstruction conjecture.**
J. Graph Theory (**JGT**), 81: 351–363, 2016.
[Joint work with B. Thatte] [12 pages]

[05] **Learning circuits with few negations.**
International Workshop on Randomization and Computation (**RANDOM**), 2015.
[Joint work with E. Blais, C. Canonne, R. Servedio and L-Y. Tan] [16 pages]

[04] **Majority is incompressible by $\mathsf{AC}^0[p]$ circuits.**
Conference on Computational Complexity (**CCC**), 2015.
[Joint work with R. Santhanam] [38 pages]

[03] **The power of negations in cryptography.**
Theory of Cryptography Conference (**TCC**), 2015.
[Joint work with S. Guo, T. Malkin, and A. Rosen] [28 pages]

[02] **Algorithms versus circuit lower bounds.**
(Survey) Electronic Colloquium on Computational Complexity (**ECCC**), 2013.

[32 pages]

[01] **Constructing hard functions from learning algorithms.**
Conference on Computational Complexity (**CCC**), 2013.
[Joint work with A. Klivans and P. Kothari] [23 pages]

– **Unconditional Lower Bounds in Complexity Theory.**
Ph.D. Thesis. Columbia University, 2015.
[253 pages]

– **Computational Complexity and the P vs. NP Problem** (in Portuguese).
Master's Thesis. University of Campinas, 2010.
[125 pages]

Teaching Experience

Remark: Videos of some lectures and tutorials talks are available here.

Accreditation: Fellow of the UK Higher Education Academy (**FHEA**). My status as a Fellow of the Higher Education Academy (FHEA) reflects my continuous improvement in teaching practice, assessment methods, feedback mechanisms, student engagement, and cultivation of professional values.

International Experience: In addition to my teaching experience at the University of Warwick in the United Kingdom, I have taught diverse student groups at the University of Campinas in Brazil, Columbia University in the United States, and Charles University in the Czech Republic:

Meta-Complexity Reading Group.
Instructor – University of Warwick (Term 1 2024-25).

CS418/CS938 - Computational Learning Theory (Undergraduate/Masters Course).
Instructor – University of Warwick (Term 1 2022-23).

CS418/CS938 - Computational Learning Theory (Undergraduate/Masters Course).
Instructor – University of Warwick (Term 1 2021-22).

Infinitary Methods in Complexity Theory (Seminar and Reading Group).
Jointly organized with Michal Garlik – Charles University in Prague (Winter 2016).

Bounded Arithmetic and Feasible Complexity Theory (Seminar and Reading Group).
Jointly organized with Amir Tabatabai – Charles University in Prague (Summer 2016).

Logic and Complexity (Seminar and Reading Group).
Organizer – Charles University in Prague (Winter 2015).

Lower Bounds in Theoretical Computer Science (Graduate Course).
Teaching Assistant – Columbia University (Fall 2013).

Introduction to Complexity Theory (Graduate Course).
Teaching Assistant – Columbia University (Spring 2013).

Introduction to Learning Theory (Graduate Course).

Teaching Assistant – Columbia University (Fall 2012).

Foundations of Cryptography (Reading Group).
Jointly organized with Tal Malkin and Rosario Genaro – Columbia University (Fall 2011).

Introduction to Computer Programming (Undergraduate Course).
Teaching Assistant – University of Campinas (Spring 2008).

Invited Talks, Seminars, and Contributed Talks (Selected)

Remark: Videos of some invited talks are available here.

– Clay Mathematics Institute (Oxford): Workshop "P vs NP" (**Invited Talk**) – September 2025.

– Computability in Europe – CiE (**Invited Tutorial**) – July 2025.

– University of Michigan, CSE Seminar (Regular Seminar) – February 2025.

– Dagstuhl Workshop: Algebraic and Analytic Methods in Complexity (**Invited Talk**) – Sept/2024.

– Oxford Proof Complexity Workshop (**Invited Talk**) – September 2024.

– Leonid Levin's 75th Birthday Workshop (**Invited Talk**) – July 2024.

– University of Warwick, Theory Highlights Workshop (**Invited Talk**) – May 2024.

– University of Cambridge, Algorithms and Complexity Seminar (Regular Seminar) – April 2024.

– Simons Institute: Meta-Complexity Reunion Workshop (**Invited Talk**) – April 2024.

– Oberwolfach Workshop "Proof Complexity and Beyond" (**Invited Talk**) – March 2024.

– University of Birmingham, TCS Seminar (Regular Seminar) – March 2024.

– Symp. on Theoretical Aspects of Computer Science – STACS (**Invited Plenary Talk**) – March 2024.

– CIRM (France) Thematic Program - (**Invited Tutorial**) – February 2024.

– Institute of Mathematics, Czech Academy of Sciences (Regular Seminar) – October/2023.

– Symposium on Theory of Computing (Conference Talk) – Orlando – June/2023.

– Logic Colloquium, Association for Symbolic Logic (**Invited Plenary Talk**) – June 2023.

– Simons Institute: Proof Complexity and Meta-Mathematics Workshop (**Invited Talk**) – March 2023.

– Dagstuhl Workshop: Computational Complexity of Discrete Problems (**Invited Talk**) – March 2023.

– Simons Institute: Meta-Complexity Boot Camp (**Invited Talk**) – January 2023.

– Edinburgh ICMS Workshop "Mathematical Approaches to Lower Bounds" (**Invited Talk**) – July/2022.

– Workshop "Complexity Theory with a Human Face III" (**Invited Talk**) – July/2022.

– Warwick-Imperial-Oxford Complexity Network (Tutorial) – May 2022.

– Rutgers DIMACS "Meta-Complexity, Barriers, and Derandomization" (**Invited Talk**) – April/2022.

– MIT Algorithms and Complexity Seminar (Regular Seminar) – March/2022.

– Symposium on Foundations of Computer Science (Conference Talk) – Online – Feb/2022.

– International Colloquium on Automata, Languages and Programming (Conference Talk) – July/2021.

– Dagstuhl Workshop: Computational Complexity of Discrete Problems (**Invited Talk**) – March/2021.

– Durham ACiD Seminar (Online Seminar) – March/2021.

– LMS Computer Science Colloquium (**Invited Plenary Talk**) – November/2020.

– Workshop "Complexity Theory with a Human Face I" (**Invited Talk**) – September/2020.

– USP/UFMG: Seminários online de Grafos, Algoritmos e Combinatória (Seminar) – September/2020.

– STOC'20 Workshop: MCSP and Hardness Magnification (**Invited Talk**) – June/2020.

– University of Birmingham, TCS Seminar (Regular Seminar) – February/2020.

– Banff (BIRS) Institute: Proof Complexity Workshop (**Invited Talk**) – January/2020.

– Simons Institute: Lower Bounds Reunion Workshop (**Invited Talk**) – December/2019.

– Computational Complexity Conference (Conference Talk) – Rutgers University – July/2019.

– International Colloquium on Automata, Languages and Programming (Conference Talk) – July/2019.

– DIMAP/Warwick Workshop (Contributed Talk) – May/2019.

– University of Edinburgh LFCS Seminar (Regular Seminar) – May/2019

– Dagstuhl Workshop: Computational Complexity of Discrete Problems (**Invited Talk**) – March/2019.

– Simons Institute for the Theory of Computing (Regular Seminar) – Berkeley – November/2018.

– Simons Institute for the Theory of Computing (Fellow Talk) – Berkeley – October/2018.

– Simons Institute: Workshop on Boolean Devices (**Invited Talk**) – September/2018.

– Int. Conference on Randomization and Computation (Conference Talk) – Princeton – August/2018.

– Clay Mathematics Institute Workshop on Computational Complexity (**Invited Talk**) – July/2018.

– Imperial College London, Dept. of Computing (Regular Seminar) – May/2018.

– Universitat Politecnica de Catalunya (Regular Seminar) – Barcelona – May/2018.

– Latin American Theoretical Informatics (Conference Talk) – Buenos Aires – April/2018.

– Queen Mary University of London (Regular Seminar) – December/2017.

– University of Oxford, Dept. of Computer Science (Regular Seminar) – October/2017.

– Computational Complexity Conference (Conference Talk) – Riga (Latvia) – July/2017.

– Symposium on Theory of Computing (Conference Talk) – Montreal (Canada) – June/2017.

– Institute of Computer Science at the Czech Academy of Sciences (Regular Seminar) – April/2017.

– Institute of Mathematics, Czech Academy of Sciences (Regular Seminar) – April/2017.

– Dagstuhl Workshop: Computational Complexity of Discrete Problems (**Invited Talk**) – March/2017.

– Institute of Mathematics, Czech Academy of Sciences (Regular Seminar) – March/2017.

– KTH Royal Institute of Technology (Regular Seminar) – Stockholm – March/2017.

– Charles University in Prague, Computer Science Institute (Regular Seminar) – March/2017.

– Low-Depth Complexity Workshop, St. Petersburg State University (**Invited Talk**) – May/2016.

– Simons Institute: Workshop on Algorithms and Complexity (**Invited Talk**) – October/2015.

– Computational Complexity Conference (Conference Talk) – Oregon (USA) – June/2015.

– Columbia University, Theory Seminar (Regular Seminar) – New York – May/2015.

– NYU-Poly, Theory Seminar (Regular Seminar) – New York – November/2014.

– Columbia University, Theory Seminar (Regular Seminar) – New York – October/2014.

– Dagstuhl Workshop: Optimal Algorithms and Proofs (**Invited Talk**) – October/2014.

– The Chinese University of Hong Kong, ITCSC-CSE Seminar (Regular Seminar) – October/2014.

– Princeton University, Meeting of Center for Comp. Intractability (**Invited Talk**) – February/2014.

– NYU-Poly, Theory Seminar (Regular Seminar) – New York – April/2013.

– Columbia University, Theory Seminar (Regular Seminar) – New York – February/2013.

Professional Service

Editor:

ACM Transactions on Computation Theory (TOCT) – Associate Editor (June/2025 –).
Theory of Computing (ToC) – Associate Editor (July/2025 –).
Theory of Computing (ToC) – Special Issue (CCC 2021).

PC Member:

Computational Complexity Conference (CCC) 2021.
Innovations in Theoretical Computer Science (ITCS) 2022.
Latin American Theoretical Informatics Symposium (LATIN) 2024.
Computational Complexity Conference (CCC) 2025.
International Colloquium on Automata, Languages, and Programming (ICALP) 2026.

PhD/MSc Defense Committees:

Sílvia Casacuberta Puig (Oxford, MSc), 2025.
Namrata (Warwick, PhD), 2024.
Avgerinos Delkos (Birmingham, PhD), 2024.
Marcel Dall'Agnol (Warwick, PhD), 2023.
Siddhartha Jain (EPFL, MSc), 2022.

Additional Committees:

Chair of the Grant+Fellowship Support Steering Committee (Warwick CS Department)
REF 2029 Working Group (Warwick CS Department)
Research Strategy Committee (Warwick CS Department)

Review Service

Grant Proposals:

European Research Council (ERC).

Journals:

Theory of Computing (ToC).
SIAM Journal on Computing (SICOMP).
Theoretical Computer Science (TCS).
ACM Transactions on Computation Theory (TOCT).
Journal of the ACM (JACM).

Conferences:

RANDOM, COLT, ICALP, CRYPTO, CCC, STOC, MFCS, FOCS, LATA, ITCS, SODA, TCC, LATIN.

References

Prof. Rahul Santhanam
Department of Computer Science
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