

Xandru Mifsud

Curriculum Vitae

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🌐 <https://xmif1.github.io>

Education

- 2024 – **DPhil in Computer Science (Clarendon Scholar)**, *University of Oxford*, under the supervision of Leslie Ann Goldberg and Andreas Galanis
- 2022 – 2024 **M.Sc. in Mathematics (by research)**, *Distinction, University of Malta*, **Thesis:** *Local v. global majority: an edge-colouring approach*, under the supervision of Josef Lauri, and co-supervision of Yair Caro and Christina Zarb
- 2018 – 2022 **B.Sc. (Hons) in Mathematics & Computer Science**, *First Class Honours, University of Malta*, **Dissertation:** *Hamiltonicity of Cayley Graphs and Digraphs*, under the supervision of Josef Lauri
- 2014 – 2016 **MATSEC Matriculation Certificate**, *St. Aloysious' College Sixth Form*

Research Interests

- **Local–global phenomena in graphs**
Majority switching edge-colourings, algorithmic and complexity perspectives.
- **Hamiltonian paths and their existence**
Vertex transitivity, Cayley (di)graphs, algorithmic perspectives.
- **Random boolean satisfiability**
Local lemma techniques, parallelisation and instance decomposition.

Research and Academic Experience

- 2024 **Research Support Officer I**, Department of Communications and Computer Engineering, University of Malta
- 2022 – 2024 **Tutor / Casual Lecturer**, Department of Computer Science, University of Malta
- 2021 – 2022 **Student Representative on Faculty of Science Board**, University of Malta
- 2021 **CERN Summer Intern**, ROOT Project
- 2018 – 2019 **Research Support Assistant**, Department of Mathematics, University of Malta

Professional Experience

- 2022 – 2023 **Software Engineer & Product Owner**, *Loqus Business Intelligence*
 - Member of core team responsible for developing novel mathematical algorithms for solving ever-changing optimisation problems.
- 2019 – 2020 **Software Developer**, *IO Labs*
 - Various applications of machine learning techniques, for (automotive) embedded systems. Client was a leading Italian sports-car manufacturer.
- 2018 – 2019 **Intern Statistician**, *National Statistics Office, Malta*
- 2017 – 2018 **Software Developer**, *Ascent Software*
 - Working on the Square Kilometre Array project, jointly with the University of Malta and the University of Oxford).

Selected Publications and Pre-prints

- Y. Caro, J. Lauri, X. Mifsud, R. Yuster and C. Zarb, "Flip colouring of graphs", *Graphs and Combinatorics* (accepted, 2024), pre-print: <https://arxiv.org/abs/2312.08777>
- Y. Caro and X. Mifsud, "On (r, c) -constant, planar and circulant graphs", *Discussiones Mathematicae Graph Theory* (2024), <https://doi.org/10.7151/dmgt.2551>
- X. Mifsud, "Flip colouring of graphs II", submitted (2024), pre-print: <https://arxiv.org/abs/2401.02315>
- X. Mifsud, " λ -Core distance partitions", *Linear Algebra Appl.* (2021), <https://doi.org/10.1016/j.laa.2020.12.012>
- I. Sciriha, X. Mifsud and J. L. Borg, "Nullspace vertex partition in graphs", *J. Comb. Optim.* (2020), <https://doi.org/10.1007/s10878-020-00624-x>

Honors and Awards

- (University of Oxford) Clarendon Fund Scholarship
- (University of Malta) Faculty of Science Dean's Award: 2018–2022

Talks and Presentations

- 2024 **30th British Combinatorial Conference**, *Queen Mary University London*
 - TITLE: On (r, c) -constant circulants.
- 2019 **Combinatorics and Graph Theory Seminar**, *University of Malta*
 - TITLE: Nullity relations on graphs with independent core vertices.

Skills

Programming Languages

- Python, Java, C, C++, JavaScript, TypeScript, Haskell, Mathematica, \LaTeX
- GitHub: <https://github.com/xmif1/>

Operating Systems

- Linux (Ubuntu), macOS, Windows

References

Dr. Sandro Spina, sandro.spina@um.edu.mt, Head of Department & Senior Lecturer (Department of Computer Science, University of Malta)

RELATION: Supervisor of undergraduate APT 'Random Boolean Satisfiability' (2022/3)

Prof. Josef Lauri, josef.lauri@um.edu.mt, Professor (Department of Mathematics, University of Malta)

RELATION: Supervisor of both undergraduate (2022/3) and masters (2023/4) theses.