Phone: +447383755005
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Webpage: https://conj34.github.io

Updated: October '24

Domenico Mergoni

Curriculum

Education

2020 - now **PhD in Discrete Mathemathics**, London School of Economics, UK.
Expected: Feb 2025

2018 - 2020 **MSc in Pure Mathematics**, ETH Zürich, Switzerland.
GPA: 5.77/6 'cum laude'

2015 - 2018 **BSc in Pure Mathematics**, University of Pisa, Italy.
GPA: 110/110

Working Experiences

- Applied Scientist (at Amazon),
  6 months internship, Jun-Dec 2024:
  Implementation of ILS algorithm for the sparse optimisation. Goals:
  - Improvement of $1 - 2\%$ in the objective function,
  - Publication of the methodology.

- Teaching (at London School of Economics):
  - Statistics and Machine Learning (2022-23):
    MA310: Machine Learning; MA455: Reinforcement Learning (MSc course).
  - Finance (2023):
    FM250: Finance; ME200: Comp. Methods in Financial Mathematics.
  - Management (2022-23) - Lecturer:
    Pre-sessional course for LSE Global Master's in Management.
  - Mathematics (2020-22):
    Discrete Mathematics, Fundamentals of Operations Research, etc.

- Other:
  - Research Assistant:

* 2023 **Supply chains** @LSE Management dept. Work on the *beer decision game*.

  - Managerial positions:

* 2021-now **Senior Subwarden**@ LSE. *Lead of a 10-people team to oversee students' wellbeing.*
2023 **Main organiser** for PCC2024. *Lead of a 4-people team.*

  - Internships:

2020 **PigeonLine**. *Applications of graph theory to statistical analysis of correlations.*
2019 **Operations Team**, ETH Entrepreneur Club.

Coding

* Python Advanced, *(Codeforces; GTA of MSc RL course)*
Kotlin Advanced, *Industry experience at Amazon*
R Intermediate, *(GTA of Machine Learning with R)*

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Awards and Grants

* 2022 **LMS Computer Science Small Grant**, London Mathem. Society.
2021 **LSE Contribution Award**, Dept. of Maths, LSE.

Papers (selected)

Areas: Pure Mathematics, Multiagent Reinforcement Learning, Game Theory, Optimisation, Methodology.

Work in progress

* 2024+ **Methodology for carbon credit assessment**, with A. Perrella, G. Marastoni.
* 2024+ **ILS for ℓ_0-bounded local improvement**, with Amazon ATS team.
* 2024+ **Convergence of Policy Gradient Methods to Nash Equilibria in Repeated Games**, with G. Ashkenazi-Golan, E. Plumb.

On Arxiv

2024 **Dirac's theorem for graphs of bounded bandwidth**, with A.E. Díaz, P. Gupta, O. Parczyk, A. Sgueglia., https://arxiv.org/abs/2311.18796.
2023 **Product free sets in** $[n]$, with L. Mattos, O. Parczyk., https://arxiv.org/abs/2311.18796.

Accepted

* 2023 **The Ramsey numbers of squares of paths and cycles**, with P. Allen, B. Roberts, J. Skokan, The Electronic Journal of Combinatorics.

Relevant Talks and Conferences

Organiser

* 2024 **PCC**, Main Organiser, University of London (LSE, UCL, KCL),
2022/23 **PhD CGO Seminar**, *PhD Organiser*, LSE.

Summer Schools

* 2023 **EEML**, *Invited participant*, Summer School organised icw DeepMind,
2023 **Charles University Spring School**, *Invited Participant.*

Speaker (selected)

09/2023 **Invited Speaker**, *Ramsey number of* P_n^2, @DMV Ilmenau,
08/2023 **Contributed Talk**, *Hypergraph partition universality*, @EuroComb Prague,
07/2022 **Contributed talk**, *Chromatic profile of* $\{C_3, \dots, C_{2k-1}\}$, @RSA Poznan,
07/2022 **Contributed talk**, *Ramsey number of* P_n^2, @ICGT Montpellier,
06/2022 **Invited seminar**, *Ramsey number of* P_n^2, @TU Hamburg,
05/2019 **Mittagsseminar**, *Minimal Ramsey Graphs for Ciclicity*, ETHZ (Supervised by C. Knierim).

Languages (ordered by proficiency)

Italian	Native
English	C2 level, IELTS test score: 8.0 on July 2018
Spanish	C1 level
Portuguese	A1/A2; work in progress