

# Laurentiu Andrei Marchis

PhD in Mathematical Statistics at the University of Cambridge

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## EDUCATION AND MARKS

- **University of Cambridge, PhD in Mathematical Statistics** 2024 - Ongoing  
*Research on topics related to robustness and privacy under the supervision of Prof. Po-Ling Loh*
- **University of Cambridge, MAST in Mathematical Statistics (Part III)** 2023 - 2024  
*Grade: Distinction with an 80% overall score and 93% in the masters thesis*
- **Imperial College London, BSc of Mathematics (88.95 overall)** 2020 - 2023  
*Top 5% and first class honours in all three years (84.72, 88.78, 89.05)*
- **German Theoretical High School "Friedrich Schiller" Oradea, Romania** 2016 - 2020  
*Romanian Baccalaureate: 9.66 overall, 10 in Mathematics, 9.85 in Physics, 9.5 in German Language, 9.3 in Romanian Language*

## SKILLS

- **Computer Based:** Python, R, Overleaf, LaTeX
- **Languages:** Romanian, English (Cambridge CAE - grade A, C2 level), German (DSD diploma - C1 level)
- **Other Skills:** Problem Solving, Independent Study, Teamwork, Communication, Writing, Time Management

## RESEARCH EXPERIENCE AND PROJECTS

- **Technical University of München (TUM PREP program)** July 2023 - August 2023  
*Fully Funded Research Summer Internship (IROP)*
  - Part of the Federated Learning and Coding Theory group at TUM
  - Analyzed gradient compression schemes (primarily applied to Neural Networks) and studied their probabilistic and statistical properties with another student from NYU
  - Successfully combined biased quantizers into unbiased ones via a set of weights, which we found via quadratic programming methods
  - Tested our results in Python and Matlab, produced a report on our results and presented them in front of the whole research group of the department.
- **Infosys** July 2022 - September 2022  
*Summer Internship*
  - Interned at Infosys in the summer of 2022 on a Data Science/Machine Learning role (Python)
  - Employed supervised and unsupervised models on company data and solidified my ML knowledge by using such methods and time series analysis on the Dow Jones data set from UCI Repository
  - Applied time series models such as ARIMA or SARIMA using Scikit-learn and PyCaret for instance to predict future repair counts of multiple products from Infosys affiliated partners based on historical data
- **Imperial College London** May 2022 - June 2022  
*Group Research Project (Year 2)*
  - Studied the Inverse Galois Problem for cyclic, symmetric and low-order groups
  - Found polynomials such that their Galois groups are isomorphic to given finite groups over the rational numbers and over extensions of the rationals by appending roots of unity
  - Submitted a written report and a video recording explaining the key points from our work
- **Imperial College London** July 2021 - August 2021  
*Undergraduate Student Researcher*
  - Funded UROP project under the supervision of Professor Martin Liebeck during the summer of 2021
  - Studied the representation growth of the exceptional Lie algebras and found explicit functions that approximate the number of irreducible complex representations of each of the 5 exceptional Lie algebras
  - Produced a report which was awarded the UROP prize
- **Imperial College London** May 2021 - June 2021  
*Individual Research Project (Year 1)*
  - Studied the conjugation in quaternion algebras and proved a result which helped me derive the commutator subgroup of the General Linear Group and prove a particular case of the Skolem Noether Theorem
  - Presented the project in front of a group of students and lecturers

## OTHER EXPERIENCE

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- **Imperial College London** *October 2022 - April 2023*
  - *Undergraduate Teaching Assistant (Year 3)*
    - Presenting exercises and teaching during problem classes
    - Providing feedback to students' weekly problem sheets
- **Citadel/Citadel Securities** *April 2022*
  - *Spring Intern*
    - Took part in the highly-selective event organized by Citadel/Citadel Securities
    - Networked with several Quantitative Researchers, Traders and Software Engineers and got an insight into the applications of ML to finance
    - Attended various panel presentations and interactive sessions with Citadel employees and other students

## ACHIEVEMENTS/AWARDS

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- **Foundress Prize and Foundation Award (University of Cambridge)**: Awarded for achieving a first-class performance in university examinations at the end of Part III
- **Dean's List in all three undergraduate years (2021, 2022, 2023)**: Awarded for being in the top 10% of my year group
- **Ken Allen prize (2023)**: Awarded to the students of greatest merit in Mathematics examinations
- **Infosys Certificate of Appreciation (2022)**: In recognition of valuable contribution as an Intern in the Infosys InStep Internship Program 2022-2023
- **G-Research prize (2022)**: Awarded to up to ten non-final year students of each of the departments of Computing, Mathematics and Physics for academic excellence
- **UROP prize (2021)**: Awarded for an outstanding research project produced under the Undergraduate Research Opportunities Programme
- **"Gheorghe S. Nadiu" Mathematics Competition, Romania (December 2019)**: First Prize
- **"Argument" Mathematics Competition, Romania (November 2019)**: Special Mention
- **"Alexandru Papiu Ilarian" Mathematics Competition, Romania (October 2019)**: Second Mention
- **Romanian Mathematical Olympiad, National stage, (April 2019)**: Bronze Medal
- **"Grigore C. Moisil" Mathematics Competition, Romania (April 2019)**: Special Mention
- **Romanian Mathematical Olympiad, County stage, (February 2019)**: First Prize
- **"Gheorghe S. Nadiu" Mathematics Competition, Romania (May 2019)**: First Prize
- **"Teodor Topan" Mathematics Competition, Romania (December 2018)**: Special Mention
- **"Argument" Mathematics Competition, Romania (November 2018)**: Special Mention
- **Romanian Mathematical Olympiad, County stage, (February 2018)**: Third Prize
- **Romanian Mathematical Olympiad, County stage, (February 2017)**: Third Prize
- **Rotary Club Oradea, Romania (December 2016)**: Excellence Prize for outstanding results in competitions and Olympiads
- **Romanian Mathematical Olympiad, County stage, (February 2016)**: Mention

## OTHER INTERESTS

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- Former member of the Mathematics, Data Science, Romanian and Investment Societies at Imperial College London
- Took part in the Securities Education course offered by the Investment Society at Imperial College London
- Enjoy playing table tennis, basketball, cards, swimming and running
- Enjoy travelling and watching movies
- Enjoy teaching and led two Olympiad preparation classes in Real Analysis and Linear Algebra for the 11<sup>th</sup> grade students in Romania during the winter break of the 2021-2022 academic year