# KEVIN MANCINI

*Mathematician and Computer Scientist*
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*I am a mathematician and computer scientist specializing in stochastic and machine learning models for random systems. My research focuses on topology- and geometry-aware learning, as well as information flow control to enhance both long- and short-range node interactions in complex graph-based tasks. Motivated by a passion for discovery, I am committed to addressing unsolved problems at the intersection of mathematics and computer science.*

## EDUCATION

**TUM - TECHNICAL UNIVERSITY OF MUNICH** Munich, GE
*Erasmus+ exchange, Department of Mathematics* *2025 - 2026*

**SAPIENZA UNIVERSITY OF ROME** Rome, IT
*MSc Applied Mathematics and Theoretical Physics* *2024 - 2026*
- Specializing in stochastic calculus and probability, with applications in machine learning for finance.

**IMPERIAL COLLEGE LONDON** London, UK
*MSc Advanced Computing – Major in Artificial Intelligence* *2023 - 2024*
- GPA: 86.7/100. Oral paper at MICCAI workshop and under-revision paper at IEEE TPAMI.
- Splunk Prize for best thesis in AI - DeltaGNN: Graph Neural Network with Information Flow Control.

**UNIVERSITY OF HULL** Hull, UK
*Erasmus+ semester exchange, Department of Engineering* *2021* - 2022

**ALMA MATER STUDIORUM – UNIVERSITY OF BOLOGNA** Bologna, IT
*BSc in Computer Science and Engineering* *2018 - 2021*
- GPA: 29.7/30 (top 2% class). Final Grade: 110/110 cum laude.

## PROJECTS & RESEARCH

***Researcher – Riemannian RL for PDE-constrained shape optimisation (paper soon)*** *2025 - Present*
- Implementing PPO agent to optimise simplicial 2-complexes under fluid dynamics constraints.

***Researcher – IX ( AI Innovation center at Imperial College London) (repository, paper)*** *2024 - Present*
- Designed novel topology-aware graph neural network in Python (under-revision paper at IEEE TPAMI).
- Achieved average accuracy increase of 4.72% and avg reduction in training time of 30.61%.

***Student Researcher – Deep Learning & Topology (video, book, paper, repository)*** *2023 - 2024*
- Developed curvature-based deep neural network for medical imaging (oral presentation at MICCAI workshop).

***Engineer – Internet of Things project (repository)*** *2021 - 2022*
- Led an international team of 6 students and ranked 1st/14 at the Hull IoT project competition.
- Engineered a device that uses sensors and SPI devices on a STM32 microcontroller to create an interactive game.

## TALKS

***Presenting Author - LOGML - PDE-Constrained Shape Optimisation in Riemannian Manifolds*** London, UK
- Presented PPO reinforcement learning model for shape optimisation with Navier-Stokes constraint *Jul 2025*

***Invited Speaker - Imperial College London - Deep Graph-Based Learning (postgraduate course)*** London, UK
- Delivered a 1-hour lecture on deep GNNs, focusing on topological and geometrical measures. *Feb 2025*

***Presenting Author – MICCAI GRAIL 2024 (paper preseantation)*** Marrakech, MA
- Presented research on DuoGNN, a novel deep learning model leveraging Olivier's Ricci curvature to enhance long- and short-range node interaction detection in graph-based learning tasks. *Oct 2024*

## WORK EXPERIENCE

**DELOITTE** Milan, IT
***Business Analyst & Developer, Full Time*** *2022 - 2023*
- Designed and developed a financial planner, led client meetings online and in-person.
- Reduced development time of OSBs to 1/5 by automating processes with Python, saving 15 working days.
- Dealt with Agile, Microservices, AWS Cloud, APIs, Spring Boot, Oracle BD, Redis, Docker, OpenShift.

**CRIF** Bologna, IT
Global FinTech & Analytics Company *2021 - 2021*
***Software Engineer, Intern***
- Winner of "CRIF GT Smart Up Internship" competition (top 16/120 students).
- Reduced SQL Server installation time by 80% using Ansible and Jenkins automation.

## PUBLICATIONS

**[1]** Mancini Kevin, and Islem Rekik. "DeltaGNN: Graph Neural Networks with Information Flow Control" **Under-revision** at IEEE TPAMI (Transactions on Pattern Analysis and Machine Intelligence) (paper, repository)
**[2]** Mancini Kevin, and Islem Rekik. "DuoGNN: Topology-aware Graph Neural Network with Homophily and Heterophily Interaction-Decoupling" *MICCAI GRAIL (Graphs in Biomedical Image Analysis) 2024 workshop*. Selected for **Oral Presentation** (video, book, paper, repository)
**[3]** Mancini Kevin, Viroli Mirko, and Aguzzi Gianluca. "ScaFi: Integration and Performance Analysis with Scala Native" Thesis project (paper, repository)

## HONORS & AWARDS

**Academic Excellence:**
***Jul 2025:*** *Selected for LOGML Summer School 2025 (~30% acceptance rate)*
***Oct 2024:*** *Oral Presentation at MICCAI GRAIL workshop 2024*
***Sep 2024:*** *Distinguished MSc Project at Imperial College London with grade 94%*
***Sep 2024:*** *Splunk Prize for the best MSc Individual Project in the area of data science and machine learning*
***Aug 2024:*** *Honorable mention at International Mathematics Competition (IMC 2024)*
***Sep 2022:*** *Best Computer Engineering Student of the cohort at Alma Mater Studiorum (2nd out of 200)*
***Sep 2021****: Er.go Scholarship for academic excellence, academic year 2020/2021*
***Sep 2020****: Er.go Scholarship for academic excellence, academic year 2019/2020*
***Sep 2019****: Er.go Scholarship for academic excellence, academic year 2018/2019*

**Industry Competitions, Fellowships, and More:**
***Jul 2025:*** *LOGML Photo Competition (1st, prize 100£)*
***Apr 2024:*** *Mentors4u Membership (mentee)*
***May 2022:*** *NovaTalent Membership (top 3% applicants)*
***Apr 2021:*** *Winner – SMARTUP GT (CRIF collaboration, Top 16/120)*
***Feb 2020****: Selected for Intrapreneurship Program 2020, an excellence program on strategic management in collaboration with Francesco Ubertini (ex Magnifico Rettore of the Alma Mater Studiorum)*

## SKILLS

***Coding:*** Java, Python, C, MATLAB, Scala, C++, HTML, CSS, PHP, SQL, LaTeX, CUDA, OpenCL, XQuery, Assembly.
***Expertise***: Deep Learning, Stochastic Processes, Bayesian Inference, Probability & Statistics, Optimization, Information Theory, Numerical Methods, Agile Development, High-Performance Computing (HPC), GitFlow.

## INTERESTS & ACHIEVEMENTS

***Adventurer & Polymath***
Mountaineer, Climber, Volunteer at the Italian Alpine Club since 2017, Scuba diver, Avid reader, Cuber, Math enthusiast.
***Personal Achievements***
Funded my tuition through scholarships and part-time jobs, helped my mother learn English.