

Efthymios Costa

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EDUCATION

Imperial College London

Oct 2021 - Present

Statistics and Machine Learning (StatML) PhD

Supervisors: Dr Ioanna Papatsouma & Professor Alastair Young

Thesis title: *Novel unsupervised techniques for mixed-type data*

University of Bologna

Jan - Mar 2024

Visiting Doctoral Student

Visiting Supervisor: Professor Christian Martin Hennig

Imperial College London

Sep 2020 - Sep 2021

MSc Statistics (Data Science)

Distinction (80.89/100)

Thesis: "A benchmarking study of distance-based clustering methods for mixed-type data"

Imperial College London

Sep 2017 - Jun 2020

BSc Mathematics

First Class Honours (78.21/100)

PROFESSIONAL EXPERIENCE

The Cyprus Institute, Climate & Atmosphere Research Centre

Jun - Aug 2020

Summer Research Internship

Nicosia, Cyprus

Project title: "Climate Impacts on Vector-borne Diseases: Integrating Environmental Drivers to the Mathematical Models of Vector Populations"

PwC Cyprus

Jun - Jul 2019

Advisory, Data Analytics Internship

Nicosia, Cyprus

RESEARCH INTERESTS

- Unsupervised learning: Cluster analysis, outlier detection, dimensionality reduction.
- Mixed-type data: Combination of continuous and discrete variables in data.
- Robust statistics: Robustness guarantees for machine learning methodologies.

PUBLICATIONS & PREPRINTS

Efthymios Costa, Ioanna Papatsouma (2025) Contribution to the discussion of Dümbgen and Davies (2025) "Connecting Model-Based and Model-Free Approaches to Linear Least Squares Regression" (*To appear in Statistica*)

Efthymios Costa, Ioanna Papatsouma (2024). "A novel framework for quantifying nominal outlyingness". *arXiv preprint arXiv:2408.07463*.

Efthymios Costa, Ioanna Papatsouma, Angelos Markos (2024). "A Deterministic Information Bottleneck Method for Clustering Mixed-Type Data". *arXiv preprint arXiv:2407.03389*.

Efthymios Costa, Ioanna Papatsouma (2023). "Outlier detection for mixed-type data: A novel approach". *arXiv preprint arXiv:2308.09562*.

Efthymios Costa, Ioanna Papatsouma, Angelos Markos (2022). "Benchmarking distance-based partitioning methods for mixed-type data". In: *Advances in Data Analysis and Classification* 17, pp. 1–24.

FUNDING & AWARDS

Poster Competition 1st Place & People's Choice Award

Faculty of Natural Sciences Research Showcase 2025, Imperial College London

Poster Competition People's Choice Award

Mathematics PhD Symposium 2025, Imperial College London

Best Postgraduate/Doctoral Paper Award

6th Annual Conference of the Cyprus Statistical Society, 2025

Faculty of Natural Sciences Prize for Excellence in Teaching

Highly commended nomination for excellence in teaching and learning, 2025, Imperial College London

MSc in Statistics Imperial College London Ambassador

Honorary title in recognition of outstanding contributions to the running and delivery of the programme

Poster Competition Runner-up & People's Choice Award

Mathematics PhD Symposium 2022, Imperial College London

PhD Studentship

EPSRC Centre for Doctoral Training (CDT) in Statistics and Machine Learning (StatML)

Warner Prize

Prize awarded for research project development in the MSc in Statistics at Imperial College London - Class of 2021

Outstanding Academic Representation Network Team Award

Student volunteer award - Imperial College Union Student Choice Awards 2020

QUALIFICATIONS

Associate Fellow of Advance HE (AFHEA)

Awarded on February 2024, Imperial College London

CONFERENCES, WORKSHOPS & SEMINARS

Joint meeting of the Italian and Dutch/Flemish Classification Societies (CLADAG-VOC 2025)	8 - 10 Sep 2025
<i>Presentation title: "Cluster Analysis from an Information-Theoretic Viewpoint"</i>	Invited Speaker
International Conference on Robust Statistics (ICORS 2025)	19 - 23 May 2025
<i>Presentation title: "A novel framework for quantifying nominal outlyingness"</i>	Invited Speaker
18th International Conference on Computational and Methodological Statistics	14 - 16 Dec 2024
<i>Presentation title: "A Deterministic Information Bottleneck Method for Clustering Mixed-Type Data"</i>	Presenter
RSS Emerging Applications Section Meeting "Network and Clustering Analysis for Emerging Applications"	13 Dec 2024
<i>Presentation title: "A Deterministic Information Bottleneck Method for Clustering Mixed-Type Data"</i>	Invited Speaker
UKRI EPSRC Mathematical Sciences Team visit at Imperial College London	9 Oct 2024
<i>Poster title: "A Deterministic Information Bottleneck Method for Clustering Mixed-Type Data"</i>	Presenter
18th Conference of the International Federation of Classification Societies	16 Jul 2024
<i>Presentation title: "A Deterministic Information Bottleneck Method for Clustering Mixed-Type Data"</i>	Presenter
Imperial Mathematics PhD Symposium	12 Jun 2024
<i>Poster title: "A Novel Approach to Outlier Detection for Mixed-Type Data"</i>	Presenter
Department of Statistical Sciences "Paolo Fortunati", University of Bologna - Weekly Statistics Seminars	1 Feb 2024
<i>Presentation title: "Outlier detection for mixed-type data: A novel approach"</i>	Presenter
16th International Conference on Computational and Methodological Statistics	16 - 18 Dec 2023
<i>Poster title: "A novel approach to outlier detection for mixed-type data"</i>	Presenter
Amazon Development Center Germany GmbH	27 - 28 Mar 2023
<i>Advanced training on Statistical Machine Learning and Computing for big-data analysis</i>	Attendee
<i>Poster title: "Benchmarking distance-based partitioning methods for mixed-type data"</i>	Presenter
Faculty of Natural Sciences Research Showcase 2022	29 Sep 2022
<i>Presentation title: "Clustering mixed-type data: Which method to choose?"</i>	Presenter
Bocconi Summer School in Advanced Statistics & Probability	11 - 22 Jul 2022
<i>Topic: Random Structures and Combinational Statistics</i>	Attendee
Imperial Mathematics PhD Symposium	16 Jun 2022
<i>Poster title: "A full factorial benchmarking study of non-parametric partitioning methods for mixed-type data"</i>	Presenter

TEACHING EXPERIENCE

Senior Graduate Teaching Assistant

Probability and Statistics - BSc/MSci Mathematics Year 1 (Autumn 2024)

Probability for Statistics - BSc/MSci Mathematics Year 2 (Autumn 2022)

Department of Mathematics, Imperial College London

Statistics - MEng Mechanical Engineering Year 3/4 (Autumn 2023)

Department of Mechanical Engineering, Imperial College London

Graduate Teaching Assistant

Data Science - MSc Statistics (Spring 2022)

Computational Statistics - MSc Statistics (Autumn 2022, 2023 & 2024)

Unsupervised Learning - MSc Machine Learning and Data Science (Autumn 2022)

Deep Learning, Supervised Learning - MSc Machine Learning and Data Science (Spring 2023)

Machine Learning - MSc Statistics (Spring 2023)

Introduction to Statistical Learning, Statistical Modelling II - BSc/MSci Mathematics Year 3/4 (Spring 2023)

Statistical Modelling I - BSc/MSci Mathematics Year 2 (Spring 2023)

Department of Mathematics, Imperial College London

OUTREACH

- Mentor for Imperial College London Mathematics School Research Project (2024 - 2025).

MEMBERSHIPS

- Fellow of the Royal Statistics Society (RSS)
- Member of the Cyprus Statistics Society (CSS)

SKILLS

Programming/IT: R (Advanced/Preferred), Python (Intermediate), C++ (Basic), MATLAB (Basic), L^AT_EX, HPC projects on compute clusters, Office 365

Languages: Greek (native), English (fluent), French (proficient)