Dr Leonidas Christodoulou

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Research Interests

Statistical machine learning, Bayesian methods and causality, Prior fitted networks, Explainability in AI, and applications of data science in environmental, industrial, and social sectors.

Profile

- Over a decade of experience as an applied data scientist across academia, industry, and the public sector.
- Lead for "Services to Industry" task under the EuroCC2 project.
- Lecturer in Data Science and Machine Learning at the Graduate School of The Cyprus Institute.
- Supervised MSc interns, and mentoring postdocs and research engineers.
- Contributed to successful funding proposals.

Publications

8. Christodoulou L. and Chang S., The Impact of Machine Learning Uncertainty on the Robustness of Counterfactual Explanations, Expert Systems with Applications, In Revision at Expert Systems With Applications, 2025 [link]
7. Loveday et al. (including L. Christodoulou), Galaxy and Mass Assembly (GAMA): Small-scale anisotropic galaxy clustering and the pairwise velocity dispersion of galaxies, MNRAS, 2017[link]
6. Mehrtens et al. (including L. Christodoulou), The XMM Cluster Survey: The Halo Occupation Number of BOSS galaxies in X-ray clusters, MNRAS 2016[link]
5. Blake et al. (including L. Christodoulou), Galaxy And Mass Assembly (GAMA): improved cosmic growth measurements using multiple tracers of large-scale structure, MNRAS 2013 [link]
4. Robotham et al. including L. Christodoulou), Galaxy And Mass Assembly (GAMA): The Life and Times of L* Galaxies, MNRAS, 2013 [link]
3. Hopkins et al. (including L.Christodoulou), Galaxy And Mass Assembly GAMA): Spectroscopic analysis, MNRAS, 2013 [link]
2. Christodoulou el al., Galaxy and Mass Assembly (GAMA): Colour and luminosity dependent clustering from calibrated photometric redshifts, MNRAS 2012 [link]
1. Mehrtens et al. (including L. Christodoulou), The XMM Cluster Survey: Optical analysis methodology and the first data release, MNRAS 2010 [link]

Teaching and Supervision

- Lecturer, Data Science and Machine Learning, Graduate School, The Cyprus Institute.

- Supervision of MSc summer interns. One project led to a submitted paper on statistical uncertainty in explainable ML.
- Mentoring of postdoctoral researchers and research engineers in statistical modeling and AI.
- Past teaching assistant at the University of Sussex.

Professional Experience

The Cyprus Institute (2024–Present)

Associate Research Scientist

- Lead the "Services to Industry" task in the EuroCC2 project, working with SMEs and public organizations.
- Deliver trainings, consultations, and develop proof-of-concepts in AI and data analytics.
- Engage in interdisciplinary research and contribute to proposal development.

Previous Industry Roles (2013–2023)

Data Scientist, UK (Various Sectors)

- Worked across the energy sector, social services, and tech startups to develop statistical and ML models.
- Led projects from proof-of-concept to production.
- Advised organizations on data strategy and capability building.

Education

- PhD in Astronomy, University of Sussex, 2012.
- MSc in Cosmology, University of Sussex, 2008.
- BSc in Physics, University of Thessaloniki, 2007.

Technical Expertise

- **Languages**: Python (scientific and data science stack), R, SQL, Bash
- **Libraries/Tools**: PYMC, PyTorch, TensorFlow, Git, MLFlow, Cloud services

Professional Service and Outreach

- Member, National Competence Center for High Performance Computing.
- Regular contributor to public engagement and training events on AI and data science.

References

- Jon Loveday - `J.Loveday@sussex.ac.uk`
- Trevor Sweetnam - `trevor.sweetnam@yahoo.ie`
- Ian Smart - `iansmart2@sky.com`