Ioannis Zachos

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EDUCATION

2020 - Present Cambridge University; PhD in Data-centric engineering funded by EPSRC. Supervised by Professor Mark Girolami.

2019 - 2020Cambridge University; MRes Future Infrastructure & Built Environment

funded by EPSRC. **Distinction** (ranked **1st** in class).

Supervised by Professor Mark Girolami.

• Courses: Probabilistic Machine Learning, Statistical Signal Analysis

2015 - 2018Warwick University; BSc Data Science. 1st class honours.

> • Courses: Machine Learning (73%), Mathematical Statistics A & B (79%), Linear Statistical Modelling (77%), Topics in Data Science (82%), Programming for Data Science (81%), Artificial Intelligence (72%).

Anatolia College; International Baccalaureate. 39/45 (93rd percentile). 2013 - 2015

• Merit-based scholarship for academic excellence.

• Physics (7/7), Mathematics (6/7), Extended essay on statistical stock price forecasting (35/36).

RESEARCH EXPERIENCE

May 2020 - Aug. 2020 Cambridge University, Arup - Stochastic modelling of urban travel demand Dissertation supervised by Professor Mark Girolami.

- Introduced a novel application of stochastic spatial interaction modelling to transportation.
- Approximated doubly intractable posterior using pseudo-marginal MCMC schemes with annealed importance sampling.

Oct. 2019 - Jan. 2020 Cambridge University, Highways England - Bayesian treatment of hydrological models for road rainfall run-off prediction.

Mini-project supervised by Professor Mark Girolami.

- Developed physics-informed machine learning (hybrid) modelling framework for hydrological applications using Python.
- Approximated posterior using Sequential Monte Carlo and computed Bayes factors to ensure model identifiability.

Warwick University - **Bayesian** online change-point detection; BSc Thesis supervised by Dr. Theo Damoulas. Mark: 79%.

Developed online framework for time series segmentation and forecast-

- ing in non-stationary spatio-temporal point processes using Python.
- Implemented conjugate models to obtain posterior efficiently and computed Maximum A Posteriori estimates of time series segmentation.

Warwick University – Large binary sequences for RNA editing; Individual project supervised by Dr. Anastasia Papavasiliou.

- Research award (1000£) by the Department of Statistics for outstanding performance in Mathematical Statistics to develop methods of summarising large binary sequences.
- Utilised theory of rough paths to compute signatures of the paths generated from simulated binary sequences using R and Python.

Jan. - April 2018

June - Aug. 2017

TECHNICAL SKILLS

Programming Python, R, Java, C

Databases MySQL, PostGIS/PostgreSQL

Cloud Amazon Web Services (S3, EC2), Google Cloud Platform
GIS QGIS, Google Earth Engine API, SentinelHub API, GDAL
Miscellaneous Git, Data Version Control, IPython, LATEX, R Shiny, Docker

Libraries TensorFlow, Keras, PyMC3, OpenCV, sklearn, ggplot2, Shapely, rasterio

Languages Greek (native), English (fluent)

WORK EXPERIENCE

Sep. 2018 - July 2019 London, UK

Cervest Ltd – Statistical Scientist;

- Research projects I led:
 - Change-point detection on complex and climate-volatile data generating processes.
 - Sequential multinomial classification algorithms for assessing environmental resilience.
 - Bayesian non-parametric models for spatio-temporal sensor fusion and yield forecasting with applications to sustainability.
- Designed and developed data acquisition infrastructures using Python for use by the Data Science team.
- Self-taught Geographical Information Systems (GIS) and trained new recruits on QGIS.
- Engaged with clients and investors and communicated statistical modelling frameworks to them.

June - Aug. 2018 Athens, Greece Eurobank Private Bank Luxembourg – Investment Advisory Intern;

- Designed, developed and deployed a web application for portfolio management using R Shiny.
- Derived optimal portfolios using efficient frontier. theory with diversification and volatility constraints.

LEADERSHIP ACTIVITIES

Dec. 2019 - March 2020 Cambridge University Judge Business School - Team communicator.

Group project for Entrepreneurship course.

• Developing business case for an air pollution prediction platform and pitching it to potential investors.

Oct. 2017 - July 2018 Warwick University Department of Statistics - Mentor in Statistics.

• Mentored first-year students and provided support for their academic studies and career planning.

Warwick University Student-Staff Liaison Committee - Student representative.

- Liaised with students & staff to improve teaching quality and student support by collecting and discussing feedback in monthly meetings.
- Assisted in the design of the course structure of the fourth-year of the Data Science degree.

HOBBIES

Oct. 2015 - July 2018

Travelling, puzzle solving, basketball, sailing, book reading.

References are available upon request.