Ioannis Zachos

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Education

2019 – Present
United Kingdom

Cambridge University; MRes+PhD Future Infrastructure & Built Environment fully funded by EPSRC.
Supervised by Professor Mark Girolami.

- Courses: Probabilistic Machine Learning, Statistical Signal Analysis

2015 – 2018
United Kingdom

Warwick 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%).

2013 - 2015
Greece

Anatolia College; International Baccalaureate. **39/45**.

- Merit-based scholarship for academic excellence.
- Physics (7/7), Mathematics (6/7), Business & Management (6/7), Extended essay on stock price forecasting using Statistics (35/36).

Research Experience

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.

Jan. - April 2018

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

- Developed online framework for time series segmentation and forecasting 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 segmentations.

Jan. - April 2018

Kaggle - Identification and Segmentation of nuclei from images of cells;
Individual project for Machine Learning. Mark: 84%.

- Trained Multi-layer Perceptron and Convolutional Neural Network with dropout to avoid over-fitting.
- Implemented Watershed image segmentation and augmented training set to make the model translation and rotation-invariant.

June - Aug. 2017

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

- 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 2017

Deutsche Bank, Warwick University - Anomaly detection of FTSE100 stocks;
Group project for Software Engineering. Team leader.

- Developed and tested an online system that employed machine learning methodologies to identify anomalies in one million daily transactions.

Skills

Programming	Python, R, Java
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 - IB Bilingual Diploma)

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.

Oct. 2015 - July 2018

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.

References are available upon request.