

Yanni Papandreou

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EDUCATION

Imperial College London

PhD Mathematics Research

2019-August 2023

Section: **Statistics**, Supervisors: Dr Andrew Duncan & Dr Jon Cockayne

Research interests: Kernel-based methods for inference of complex models, Gaussian Processes, Machine Learning, Bayesian

Modelling of Differential Equations

Imperial College London

MSc Statistics

2018 - 2019

Grade: **Distinction** (85.7%)

- **Winton Capital Prize** awarded for best MSc Statistics student (top of class)

Thesis: Kernel-Based Inference Methods for Ordinary Differential Equations (awarded a **distinction**: 84.5%):

University of Cambridge

BA Mathematics

2015 - 2018

Grade: **High 1st Class Honours** (76%)

- **Georges Lemaître Prize** awarded for achieving the highest mark in the Maths Tripos at St Edmund's College

RESEARCH AND COURSEWORK

Preprint ↗ : Theoretical Guarantees for the Statistical Finite Element Method

- Presented a new theoretical analysis of the Statistical Finite Element Method (StatFEM), demonstrating that it has similar convergence properties to the finite element method on which it is based.
- In particular, demonstrated a bound on the 2-Wasserstein distance between the ideal prior and posterior and the StatFEM approximation thereof, and showed that this distance converges at the same mesh-dependent rate as the finite element solution converges to the true solution.

MSc Thesis ↗ : Kernel-based Inference Methods for Ordinary Differential Equations

- Investigated the use of Maximum Mean Discrepancy for parameter inference in generative models based on ODEs.
- In particular, studied an adjoint method for gradient descent in high-dimensional parameter spaces.

MSc Coursework

- Sampling methods such as inverse transform, rejection sampling, and MCMC methods including Metropolis-Hastings and Gibbs samplers (achieved a distinction grade of 82.9% on Computational Statistics coursework).
- Advanced simulation methods including particle filtering methods (achieved a distinction grade of 80.5% on Advanced Simulation Methods coursework).
- Machine Learning algorithms including: fitting models using Gaussian Processes, binary classification using methods such as logistic regression and generative linear classifiers and PCA (achieved a distinction grade of 83.5% on Machine Learning Coursework).
- Time series modelling.

PROFESSIONAL EXPERIENCE

Arabesque AI - Research Intern

Aug-Nov 2021

- Investigated approaches for Market Regime Detection utilising Change-point Detection (CPD) algorithms.
- In particular, looked at a kernel CPD algorithm which maps time-series into a high-dimensional feature space in order to detect arbitrary changes in distribution for the original time-series.

GTA and Tutoring

2018-Present

- Graduate Teaching Assistant helping out with tutorials/marking for Maths undergrads and MSc Stats students.
- Online maths tutor with MyTutor UK and Keystone Tutors.

AWARDS

- **MSc Stats Challenge**: First place winning team in the annual Imperial College MSc Stats challenge where we had to fit a model to noisy financial time-series data in order to optimize the Residual Sum of Squares. Our algorithm later went on to be in the top bracket of Auquan's spring challenge competition.
- Highest Subject Mark (2013): A Level Maths (**Internationally**), Further Maths, and Physics (**in Cyprus**).

SKILLS

Computing: Python (proficient), Julia (proficient), R (proficient), LaTeX (proficient), Git (intermediate), Docker (novice), Scala (novice), C++ (novice), Excel (novice)