

Michalis Vrettas - Ph.D.

Intro: I am an information engineer by training with a PhD in computer science and a diverse computational background, with over ten years of post doctoral scientific research experience in various domains, such as: machine learning, data assimilation, stochastic processes, climate modeling, single molecule microscopy image analysis and computational molecular biology.

Keywords: Bayesian inference, machine learning, artificial neural networks, regression/classification, stochastic processes, optimization algorithms, data assimilation, mathematical modeling, Python3, C++11.

[Professional Experience]

- 2020 – 2024 **Postdoctoral Researcher**, *University of Naples – Federico II*, Naples, Italy.
As a post-doctoral researcher at the department of Pharmacy I focused on developing **machine learning** and **artificial intelligence** solutions for classification/regression problems.
- 2017 – 2020 **Data Scientist**, *Central Laser Facility – STFC*, Harwell, UK.
In this role I developed and applied **advanced computational methods** in C++11 and PYTHON3 (using numpy, scipy, matplotlib, pandas), to maximize the scientific potential of **single molecule microscopy** data, to enable scaling up the analysis process and translating it from lab to the clinic.
- 2013 – 2017 **Ed Lorenz Postdoctoral Scholar & Associate Specialist**, *U. C. Berkeley*, California, USA.
Scientific research and implementation of algorithms, of novel **mathematical models** (numerical solvers of **Partial Differential Equations**), in groundwater hydrology with major applications in global climate models.
- 2011 – 2013 **Postdoctoral Research Fellow**, *Aston University*, Birmingham, UK.
Worked on a European Union (EU)-funded project on **remote sensing classification** uncertainty.
- 2010 – 2011 **Postdoctoral Research Fellow**, *University of Nottingham*, Nottingham, UK.
Developed statistical methodologies (**Monte Carlo EM**) for quantifying computer simulation discrepancy, with an application to a conceptual rainfall-runoff hydrological model.

[Education]

- 2006 – 2010 **Ph.D. Computer Science**, *Aston University*, Birmingham, UK.
Thesis: Approximate Bayesian techniques for inference in stochastic dynamical systems.
Score : Pass.
- 2000 – 2004 **B.Sc. Information Engineering**, *A.T.E.I. of Thessaloniki*, Greece.
Thesis: Automated exam timetables: Optimization with parallel evolutionary algorithms.
Score : 87%, ECTS units: 240.

[Professional Training]

- July 2017 **CUDA Programming on NVIDIA GPUs**, *Oxford University*, Oxford, UK.
- May 2012 **Advanced Data Assimilation for Geo-sciences**, *Ecole De Physique*, Les Houches, France.
- Aug. 2008 **Earth System Monitoring and Modeling**, *ESA-ESRIN*, Frascati, Italy.
- Feb. 2008 **Mathematics for Data Modeling**, *University of Sheffield*, Sheffield, UK.
- Sep. 2006 **Pattern Analysis for Neural Networks**, *Aston University*, Birmingham, UK.

[Skills]

Computational Machine learning, Bayesian analysis, data assimilation, optimization and AI algorithms
Programming PYTHON (8+ years), MATLAB (6+ years), C++(3+ years), JAVA (2+ years)
Op. System Linux (Ubuntu), macOS, Windows
Other LATEX, OMP, CUDA (Thrust), ImageJ (Fiji)

[Languages]

Greek Mother tongue
Italian Beginner (level - A2)
English Full professional proficiency (level - C2)