

IOANNIS PETROMICHELAKIS

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Final year engineering Ph.D. candidate focusing on applied mathematics and specializing in computational stochastic dynamics.

TECHNICAL SKILLS

Machine Learning, Optimization, Monte-Carlo methods, Signal processing, Uncertainty quantification, Software development

Programming: Python (Pandas, Scikit-learn, StatsModels, Scipy, wxPython), SQL, Matlab, R, Fortran

PROFESSIONAL EXPERIENCE

Goldman Sachs

Securities Division, Summer Associate

New York, NY
May 2019-Aug 2019

- **Algorithmic Trading (Equities):** Improved the execution strategy selection process by building a nonlinear regression model in Python (Scikit-learn, Pandas, SQL) for predicting market-impact using order flow data.
- **Quantitative Strategies:** Improved the core platform for pricing customizable options by implementing variance reduction techniques and Quasi-MC for accelerating convergence of Monte-Carlo simulation.

Domos Structural

Civil Engineering Consultant and Project Manager

Heraklion, Greece
Oct 2013-Aug 2016

- Managed large-scale construction projects and provided consultation in reliability-based solutions

RESEARCH EXPERIENCE

Columbia University

Stochastic Engineering Dynamics Lab, Research Assistant

New York, NY
Sep 2016-present

- Developed the Wiener path integral (WPI), a theoretical physics' semi-analytical technique for solving nonlinear Stochastic Differential Equations (SDEs) using Matlab and Python [6 papers]
- Applied compressed sensing for multidimensional function approximation (Matlab) [3 papers]
- Implemented computational algebraic methodologies for invariant manifolds (Symbolic Matlab) [1 paper]
- **Coursework:** Bayesian Models for Machine Learning, Sparse Representations in High Dimensional Geometries, Digital Signal Processing, Random Signals and Noise, Stochastic Processes in Mechanics, Convex Optimization, Applied Functional Analysis, Stochastic Control and Financial Applications (audited)

Foundation for Research and Technology - Hellas (FORTH)

Institute of Applied and Computational Mathematics, Research Associate

Heraklion, Greece
Jan 2014-Dec 2014

- Developed mathematical imaging techniques for scatterer localization using recorded signals [4 papers]

EDUCATION

Columbia University

Ph.D. in Engineering Mechanics. GPA: 4.1/4.0

New York, NY
Expected May 2020

Technische Universität Dresden

M.Sc. in Computational Mechanics. GPA: 3.9/4.0

Dresden, Germany
Oct 2013

National Technical University of Athens

Diploma in Civil Engineering. GPA: 3.5/4.0

Athens, Greece
Jul 2011

HONORS AND AWARDS

- 2 Best Paper Awards (Dynamics/Probability) in the Engineering Mechanics Institute conferences MIT 2018/Caltech 2019
- Received Ph.D. sponsorship and 2 external fellowships for academic excellence (total \approx \$180k) 2016-2020
- Best Teaching Assistant Award (partly based on students' evaluations) for excellence in teaching Columbia 2018
- Best M.Sc. Thesis Award (Günther Grüning Preis) by the German Association of Test Engineers TU Dresden 2013
- 4 Awards in National Mathematical Competitions by the Hellenic Mathematical Society 2001-2005

Side Projects: • **Data Science:** Developed a recommendation system for Airbnb listings using Natural Language Processing (NLP) techniques on Yelp and Airbnb data [link]. • **Structural Analysis and Shape Optimization:** Developed two extensive desktop applications including GUI (wxPython) [link]. • Contributed to the preservation of historical monuments [3 papers]