Panos Parpas

CONTACT INFORMATION

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EMPLOYMENT

Imperial College London, **Sept, 2011 - To date**
Department of Computing
Reader (equivalent to US Associate Professor)
Associate Director
Centre for Computational Methods in Science and Engineering

Fitch Learning, **Sept, 2022 - To date**
CQF Faculty Member

Massachusetts Institute of Technology, **Sep, 2009 - Aug, 2011**
Research Fellowship ,
MIT Engineering Systems Division

Credit Suisse, **Dec, 2007 - Jul, 2009**
Vice President,
Global Modelling and Analytics Group,

Imperial College London, **Oct, 2006 - Dec, 2007**
Research Associate, Quantitative Analysis and Decision Science Group,
Department of Computing.

EDUCATION

Imperial College London,
Department of Computing
Ph.D. in Computational Optimisation **Oct, 2002 - May 2006**
Thesis Title: Algorithms in Stochastic Optimisation.

Imperial College London,
Department of Computing
MSc in Advanced Computing, **Oct 2001 - Oct 2002**

Kings College London,
Department of Computing
BSc in Computer Science, **Oct 1997 - Jun 2000**

FUNDING & AWARDS

Google Cloud Research Credit Award (PI, $5,000) *Efficient Transition State Computation in Molecular Dynamics*, **Sept 2024 – Sept 2025**

JP Morgan AI Research Faculty Awards (PI, £150,000) *Secure and Self-Optimizing Distributed Inference*, **Sept 2021 – Sept 2023**

Stem For Britain Award, Presented in a UK Parliament Event **March 2022**

Engineering Physics Science Research Council (co-I, £1,680,800) EP/W003317/1 *ADOPT - Advancing optimisation technologies through international collaboration* **Sept 2021 – Sept 2024**

JP Morgan AI Research Faculty Awards (Co-I, £150,000) *Dynamics, Control and Uncertainty Quantification for Stable Machine Learning Algorithms*, **May 2019 – May 2021**

Engineering Physics Science Research Council, EP/M028240/1, (PI, £765,342) *Uncertainty-Aware Planning and Scheduling* , **Sep 2015 – Jul 2019**

EU FP7 Marie Curie Grant, (PI, Imperial, £135,000) *Stochastic Optimal Control of Multiscale Markov Processes* **Oct 2012 – Oct 2016**

Engineering Physics Science Research Council, EP/K040723/1, (PI, £110,496) *SI2-CHE: ExTASY: Extensible Tools for Advanced Sampling and analysis* **Jul 2013 – Jul 2016**

Engineering Physics Science Research Council EP/J014265/1, (PI, £33,362) *Adaptive Collective Variables: Automatic Identification and Application of Multiresolution Modelling*, **Sept 2011 – Jun 2012**

Engineering Physics Science Research Council EP/J014133/1,(PI, £44,726) *Potential Energy Surfaces of Various Accuracy for Bio-molecular Simulations*, **Sept 2011 – Jun 2012**

Massachusetts Institute of Technology – Cyprus Institute Fellowship **Oct 2009 – Oct 2011**

Overseas Research Award – British Council **Sep. 2002**

Engineering Physics Science Research Council Doctoral Training Award (DTA) . **Sep. 2002–2005**

TEACHING

Currently supervise 3 PhD students and have graduated 9 PhD students (since 2011)
MSc/UG project supervision approx. 10 students per year (since 2011)
Mathematics for Machine Learning (Oct-2022, approx. 500 students), CQF, Fitch Learning.
Machine Learning Applications in Finance (Oct-2022, approx. 500 students), CQF, Fitch Learning.
Computational Optimization (2011-to date, MSc,approx. 80 students), Computing, ICL.
Computational Finance (2013-to date,MSc,approx. 220 students), Computing, ICL.
Computational Finance with C++(2017-to date,MSc,approx. 60 students), Business School, ICL.
Software Engineering - Algorithms (2013, 2nd year UG course, 150 students), Computing, ICL.
Operations Research (2005-2006, 3rd year UG course, approx. 50 students), Computing, ICL.
Modeling Risk Dynamics and Decisions (2010 Spring Term), Guest Lecturer, MIT.
Energy Systems Modeling (2010 Autumn Term), Guest Lecturer, MIT. MSc Project supervision, (2005 – 2008, 2011 –), Department of Computing Imperial College London.
Teaching Assistant for Mathematical methods, Advanced operations research, Computing for optimal decisions, Introduction to C++. (2002 – 2008), Imperial College London.

PHD STUDENTS

1. Howard Su, (2023- to date) Algorithms for Backward Stochastic Differential Equations
2. Daniel Lengyel, (2019- to date) Optimal Zero-Order Methods
3. Alexis Laignelet (2019- to date), Implicit gradient descent
4. Conor McMeel, (Graduation due in 2024) Uncertainty Quantification of First Order Convex Optimization Algorithms
5. Benjamin Scharpf (2019-2023), Stability of Deep Learning in Mathamatical Fiance
6. Quang Tran (Graduated 2017), Algorithms in Stochastic Programming
7. Sei Howe (Graduated 2016), Bounds in Singularly Perturbed Optimal Control Models
8. Chin-Pang Ho (Graduated 2016), Multilevel Optimisation Algorithms
9. Vahan Hovhannisyan (Graduated 2017), Optimal multiresolution algorithms for composite convex optimisation
10. Juan Campos Salazar (Graduated 2017), Algorithms for Semi-definite Programming Problems
11. Ruben Menke (Graduated 2015), Smart Water Systems
12. Robert Wright (Graduated 2013), Water Distribution Networks

PUBLICATIONS

For a full list see: Google Scholar

1. A. Borovykh, N. Kantas, P. Parpas, G.A Pavliotis, Stochastic mirror descent for convex optimization with consensus constraints **SIAM Journal on Applied Dynamical Systems**, 2024, 23(3), pp.2208-2241.
2. T. Leliévre, P. Parpas, *An algorithm using Witten Laplacian to localize index-1 saddle points*, **SIAM Journal on Scientific Computing**, 2024 Apr 30;46(2):A770-97.
3. N. Tsipinakis, P. Parpas A Multilevel Method for Self-Concordant Minimization **Journal of Optimization Theory and Applications**, to appear 2024.

4. P. Parpas, Corey Mury *Predict Globally, Correct Locally:Parallel-in-Time Optimal Control of Neural Networks*, **Automatica**, to appear 2024.
5. L. Sharrock, N. Kantas, P. Parpas, G.A Pavliotis. *Parameter Estimation for the McKean-Vlasov Stochastic Differential Equation* **Stochastic Processes and Applications**, Volume 162, August 2023, Pages 481-546.
6. A. Borovykh, N. Kantas, P. Parpas, G.A Pavliotis. *On stochastic mirror descent with interacting particles: convergence properties and variance reduction* , **Physica D**. 418 (2021) 132844.
7. Güler, Batuhan and Laignelet, Alexis and Parpas, Panos, Towards robust and stable deep learning algorithms for forward backward stochastic differential equations, **Neural Information Processing Systems** ,2019.
8. Ho, C.P., Kocvara, M. and Parpas, P., 2019. *Newton-type multilevel optimization method.* **Optimization Methods and Software**, 37(1), pp.45-78.
9. C.P. Ho, P. Parpas. *Empirical Risk Minimization: Probabilistic Complexity and Stepsize Strategy* , **Computational Optimization and Applications**, June 2019, Volume 73, Issue 2, pp 387410.
10. J. S. Campos Salazar, P. Parpas. *A Multigrid approach to SDP relaxations of sparse polynomial optimization problems* , **SIAM Journal on Optimization**, September 2017.
11. P. Parpas. *A Multilevel Proximal Gradient Algorithm for Large Scale Optimization* , **SIAM Journal on Scientific Computing**, Vol. 39, Issue 5, Nov. 2017.
12. Parpas P, Ustun B, Webster M, Tran QK. Importance sampling in stochastic programming: A Markov chain Monte Carlo approach. **INFORMS Journal on Computing**. 2015 May;27(2):358-77.
13. V. Hovhannisyan, P. Parpas, and S. Zafeiriou. *MAGMA: Multi-level accelerated gradient mirror descent algorithm for large-scale convex composite minimization* , **SIAM Journal on Imaging Sciences**, 9(4), 18291857, 2016.
14. Parpas, P., Rustem, B. and Pistikopoulos, E.N., 2006. *Linearly constrained global optimization and stochastic differential equations*. **Journal of Global Optimization**, 36, pp.191-217.

SERVICE

- Senior Program Committee: ACM International Conference on AI in Finance (2020, 2021,2022, 2023, 2024)
- Workshop on Quantum Computing and Machine Learning Control (co- organiser ,Imperial College London, , funded by Quantitative Sciences Research Institute 2023)
- Workshop on Machine Learning and Optimal Control (co- organiser, Imperial College London, funded by Quantitative Sciences Research Institute 2022)
- 17th British-French-German Conference on Optimization, June 2015 (Member of the local organising committee)
- Membership of editorial boards of international journals: Guest Editor, Optimization Methods & Software, Mathematical Programming Associate Editor, Computational Management Science (since 2009), Energy Systems (since 2011)
- Member of the EPSRC Peer review college (since 2015)
- Member of SIAM, Activity groups: Optimization, Scientific Computing.

MANAGEMENT & ADMINISTRATIVE ACTIVITIES

- Director of the Joint Mathematics and Computing degree programme (since 2017)
- Co-director of Centre for Financial Technology, Imperial College London (2018-to date)
- Associate Director of Centre for Computational Methods in Science and Engineering (2017-to date), Imperial College London
- Athena Committee (College-wide Committee) (2013-to date).
- Head of Departmental Athena Swan Committee (2013–2016).
- Undergraduate Interviews (approx. 20 per year)
- Member of academic job interview panel (2018–)