Daniel Lengyel

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Education

Imperial College London — London UK
Computer Science, PhD — *Expected Fall 2023*

- **Advisors**: Nicholas R. Jennings, Panos Parpas, and Nikolas Kantas.
- **Topics**: Derivative free optimization, distributed optimization, interacting particle methods, and optimality of data for function approximation.

UC Berkeley — Berkeley, CA, USA
Applied Mathematics, BA; Computer Science, BA — *May 2019*

- **Overall GPA**: 3.84/4.0, **Major GPAs**: 3.92/4.0
- UPE Computer Science Honors Society.

Experience

RISELab at UC Berkeley — Fall 2017–Fall 2019
Research Assistant — *Berkeley, CA, USA*

- Developed an HVAC control algorithm that minimizes energy use while maximizing the comfort of occupants for the XBOS-DR project.
- Deployed and tested the method successfully across commercial buildings in California.

Salzburg Research — Summer 2017
Control and IoT Intern — *Salzburg, AT*

- Created a self-driving slot-car from scratch; beats even descent players.

Mint AI — Summer 2017
Data Scientist — *Vienna, AT*

- Developed and implemented a recommender system based on user's value-investing beliefs and risk tolerance.
- Represented the startup at Web Summit's MoneyConf.

VRVis — Summer 2016
Virtual Reality and Graphics Intern — *Vienna, AT*
Project: Create a virtual reality fire extinguishing simulator for the training of office workers and firefighters.

- Developed and implemented a realistic real-time simulation for fire in a closed room.

Leadership and Teaching

Imperial College Business School — Spring 2022–
Graduate Teaching Assistant — *London, UK*

- Master's Courses: Mathematics for Finance, Computational Finance with C++.

Imperial College London, Department of Computing — Fall 2019–
Graduate Teaching Assistant — *London, UK*

- Master's Courses: Computational Optimisation, Mathematics for Machine Learning, Deep Reinforcement Learning, Computational Finance.
- Bachelor's Courses: Graphics, Computational Techniques: Linear Algebra and Differential Equations.

Quantum Computing at Berkeley — Fall 2017-Spring 2019
Founder and President — *Berkeley, CA, USA*

- Established and taught "Intro to Quantum Computing" (DeCal).
- Won the Best Newcomers prize at Rigetti's Quantum Computing Hackathon for our implementation of a Quantum SVM.
- Awarded the Student Technology Fund of over $\$15,000$.

BERC Undergraduate — Fall 2017-Spring 2019
President — *Berkeley, CA, USA*

- Reinvigorated the undergraduate branch of BERC; a thriving community on campus with the goal to find, develop and support interests within energy and resources.

Technical Skills

Languages: Python, Java, C++, C, C#, Go, Javascript
Frameworks: Spark, Hadoop, CUDA, gRPC
Libraries: Jax, Tensorflow, PyTorch, OpenCV, OpenAI, Pandas, NumPy, scikit-learn

Languages and Hobbies

Interests: Music, Tetris and Formula 1.
Languages: German, English, Hungarian.
Sports: Football, Basketball, Snowboarding, Surfing and Skateboarding.

Publications

Peer Reviewed Papers

- **D. Lengyel**, J. Petangoda, I. Falk, K. Highnam, M. Lazarou, A. Kolbeinsson, M. Peter Deisenroth, N. R. Jennings. GENNI: Visualising the Geometry of Equivalences for Neural Network Identifiability, NeurIPS Differential Geometry meets Deep Learning workshop, 2020.
- G. Fierro, M. Pritoni, M. AbdelBaky, **D. Lengyel**, J. Leyden, A Prakash, P. Gupta, P Raftery, T. Peffer, G. Thomson, D. E. Culler. Mortar: an open testbed for portable building analytics, ACM Transactions on Sensor Networks, 2019.
- A. A. Panagopoulos, M. Katsigiannis, M. Pritoni, G. Fierro, **D. Lengyel**, T. Peffer, G. Chalkiadakis, D. E. Culler. Dealing with Expected Thermal Discomfort, ACEEE Summer Study on Energy Efficiency in Buildings, 2018.

Invited Talkes

- **D. Lengyel**, P. Parpas, N. R. Jennings. Deriving the Optimal Linear Gradient Estimator: Using Fine and Coarse Models, International Conference on Continuous Optimization (ICCOPT), 2022.

Submitted and Current Work

- **D. Lengyel**, A. Borovykh. Deep neural networks on small data: is the implicit bias strong enough?, October 2022 (Submitted).
- **D. Lengyel**, P. Parpas, N. R. Jennings. Fine estimation of gradients using coarse models: efficient computation of optimal sample points for the simplex gradient under local curvature information, November 2022.
- **D. Lengyel**, A. Borovykh. Obtaining optimal data points for function approximation under a novel optimality metric, January 2023.
- **D. Lengyel**, N. Kantas, P. Parpas, N. R. Jennings, Numerical integration schemes for the dynamics of interacting stochastic mirror descent with consensus constraints: Convergence rates and relationship to distributed optimization algorithms, Spring 2023.