

Igor Gotlibovych, PhD (cantab)

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🌐 London/Cambridge/Munich - 🗣 EN/DE/UKR/RU

Expertise

📈 deep learning, applied machine learning, time series, forecasting, optimization, visualisation

🔬 algorithm R & D for finance, energy, healthcare, control systems, DSP, image processing

python golang scikit-learn tensorflow k8s terraform AWS MATLAB C git TDD CI

Experience

Jul 2020 – present\$ **Quantitative Researcher** - *Kvasir Technologies*

- developing frameworks for high-frequency energy trading, from research and backtesting tools to real-time system
- researching and implementing systematic long-short equity strategies using a range of modern ML approaches
 - analytical and numerical algos for portfolio construction and hedging
 - NLP based signals; end-to-end portfolio construction using deep learning
 - implemented frameworks for reproducible experiments, feature and hyperparameter selection
- developing and maintaining a range of internal tools and libraries
 - caching and parallelism tools for large experiments with focus on runtime
 - code optimization
 - introduced unit testing and CI/CD best practices

Nov 2018 – Jul 2020 **Head of Machine Learning** - *Octopus Energy*

Using deep learning and smart meter data to bring the energy industry into the 21st century.

- developed and productionised ML models for trading, operational forecasts, and risk modelling
- researched unsupervised and semi-supervised approaches to time series disaggregation
- developed core algorithms and tools for flexible battery storage optimisation
- contributed to a number of internal and open-source tools for ML and optimization
- set up a scalable ETL and deep learning platform ground-up using open-source stack (AWS, k8s, airflow, argo, dask, Presto)

I presented some of our forecasting work at events including PyData London (video, slides) and Tensorflow London (slides).

Jul 2018 – Nov 2018 **Head of Data Science** - *USIO Energy*

Developed unique personalised energy demand forecasting technology ground-up. The core ML team and our IP were acquired by Octopus Energy

- hands-on lead in a team of 6 Data Scientists, Software Engineers and Machine Learning Engineers
- implemented core machine learning framework for reproducible model development and deployment
- conceived, researched and implemented novel deep learning approaches to time series forecasting
- hired key team members; introduced processes and best practices

Jan 2018 – Jul 2018 **Senior Data Scientist** - *Jawbone Health*

I developed machine learning solutions for novel medical diagnostics from wearable sensors.

- developed and implemented a range of signal processing, Bayesian, and machine learning techniques applied to multi-channel clinical time series
- developed a state-of-the-art deep learning algorithm for early diagnostics of atrial fibrillation
- authored a conference paper and presented results at KDD2018

Feb 2016 – Jan 2018 **Algorithm Development/Control Systems Engineer** - *Cambridge Mechatronics Limited*

I developed novel optical image stabilization and autofocus systems, working with a multi-disciplinary team of firmware, software, and mechanical engineers.

- designed and implemented closed-loop control algorithms for highly nonlinear thermally actuated systems, using python / scipy and MATLAB for prototyping and C for embedded implementation
- introduced ML methods to optimize performance of non-linear control systems
- improved internal software development, testing and release processes, automating software, firmware and hardware tests from prototype PCB to handset level
- co-authored several international patents (WO2018015762, WO2017212262)

Apr 2014 – Oct 2016 **Professional Yacht Race Skipper** - *Clipper Ventures, various*

After completing my PhD, I have pursued a number of sailing projects: restoring an ocean-going yacht, teaching sailing, and working as a professional race skipper for a round-the-world yacht race.

Sep 2010 – Apr 2014 **PhD in ultra-cold atom physics** - *University of Cambridge*

I completed my PhD thesis on “Degenerate Bose Gases in a Uniform Potential”. The appeal of my chosen research field lies in combining experimental work with advanced theoretical understanding of condensed matter physics.

- used a combination of analytical, numerical, and computer algebra methods to develop a theoretical framework for describing a novel class of thermo-dynamic systems
- developed custom image analysis tools and algorithms
- authored multiple articles in top peer-reviewed journals

Jun 2007 – Aug 2010 **Summer Research Student** - *Max-Planck Institute for Quantum Optics*

During my undergraduate years, I joined a Nobel-prize-winning research group in Munich as a summer student to work on developing new laser systems for precision metrology.

- I wrote high-performance code in C and Mathematica and co-authored two papers and presented results at seminars

Sep 2006 – Jun 2010 **MSci in experimental and theoretical physics** - *University of Cambridge*

I took a combination of theory and math-intensive courses from the Mathematics and the Natural Sciences Tripos, achieving top grades throughout.

My Master’s thesis on “Microwave Manipulation of Ultracold Atoms” combined development of experimental microwave electronics, software control systems and a theoretical study of thermodynamics in reduced dimensionalities.

Sep 1994 – Jul 2006 **High school diploma (Abitur)** - *Germany*

I completed the German Abitur top of the year with a grade of 1.0 (equivalent to an A* average), majoring in maths and physics. During my school years, I have won numerous awards for mathematics and science competitions.

Awards and Achievements

- Scholarships: Gates Cambridge Trust, Cambridge European Trust, Churchill College, German Studienstiftung
- Sir Nevill Mott Prize for best Master’s thesis; top of the year in Cambridge for three years running
- Winner of the European Union Contest for Young Scientists
- captain and winner of the German team in the International Young Physicists' Tournament
- three-time gold medallist in the International Physics Olympiad
- part of the German selection for the International Mathematics Olympiad

Hobbies

Making things, Cycling, Mountaineering, Sailing

Publications

- **End-to-end Deep Learning from Raw Sensor Data: Atrial Fibrillation Detection using Wearables**, I. Gotlibovych *et al.*, *ACM SIGKDD* (2018)
- multiple publications on Bose-Einstein condensates
- multiple publications on XUV frequency combs for precision metrology