Pavel Berkovich

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Education

2018–2019 (in progress) **University College London**, *MSc Computational Statistics and Machine Learning*
Courses include: *Deep & Reinforcement Learning (DeepMind), Natural Language Processing, Unsupervised Learning & Approximate Inference (Gatsby Unit), Statistical Data Analysis*

2013–2016 **University of Cambridge**, *BA (Hons.) Computer Science*
Courses include: *Stochastic Modelling, Artificial Intelligence, Numerical Methods, Algorithms, Digital Signal Processing, Fourier Methods, Information Theory, Information Retrieval*

Professional Experience

Aug 2016-Aug 2018 **Morgan Stanley**, *Securitized Products Group*, European Risk Modelling
Computational pricing and predictive risk modelling for European asset-backed securities.

Jun-Aug 2015 **Morgan Stanley**, *FX Electronic Market Making*, Summer Intern
Improved latency of high-frequency DMA orders system, reducing transaction costs for clients.

Jun-Aug 2014 **University of Cambridge**, *Computer Laboratory*, Systems Research Intern
Devised scalable message-passing algorithms for distributed IoT platform.

Technical Expertise

Statistics	GAMs, MLE, Hypothesis Testing, Stochastic Processes, MCMC, Resampling
Time-Series	HMMs, State Space Models, Bayesian Non-Parametrics, ARMA, (G)ARCH, VAR models
Prediction	Neural Networks, Kernel Methods, Decision Trees, Ensembles, SVMs, Online Methods
Unsupervised	Clustering, (P)PCA / FA, Mixture Models, ICA / BSS, LDA, t-SNE, Graphical Models
Control	Multi-Armed Bandits, Policy-Gradient Methods, Markov Decision Processes, Q-Learning
Programming	Python (PyTorch, Tensorflow, Keras), R, MATLAB, Scala, C/C++, Java, OCaml
Presentation	LaTeX, HTML/CSS, AngularJS, MS PowerPoint, TWiki, HTML/CSS, Fusion Tables

Selected Projects

- Adapting Google Brain's state-of-the-art Transformer seq2seq deep neural attention model to the task of automatically translating natural language to Python code
- Using Gaussian Processes to predict future global CO_2 emissions from historical data
- Using HMMs to model the eruption pattern of the Old Faithful geyser
- Breaking substitution ciphers using the Metropolis-Hastings MCMC sampling algorithm
- Using GLMs to explain variations in level of nitrogen oxide in ambient air over time

Personal interests

Markets
- As part of Cambridge University Finance and Investment Society's Relative-Return Fund (RRF), used fundamental analysis to pick stock basket that subsequently generated annual $\alpha = 0.13$.
- Created an analytical engine to find arbitrage opportunities in cryptocurrency market.

Basketball
- Running an amateur club in East London, created web application to automate management.
- In 2014-16, captain and coach of college team. By actively recruiting, planning trainings, improving discipline and tactics, led team to bronze in Cambridge University Basketball Cuppers.