

Ian Osband

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Education

- 2012–2016 **Ph.D.**, *Stanford University*, 4.0/4.0 GPA.
Department of Management Science & Engineering with a Ph.D. minor in Statistics
Dissertation: *Deep Exploration via Randomized Value Functions*
Advisor: Benjamin Van Roy
Committee: John Duchi, Ramesh Johari, Mykel Kochenderfer, Percy Liang
Awarded second place in Dantzig dissertation award (INFORMS national competition).
- 2010–2011 **Masters of Mathematics**, *Oxford University*, *First class*.
Graduated 1st of over 200 students in final examinations. Winner of the Gibbs prize.
The only student (in any discipline) to be commended every single term by the Warden.
- 2007–2010 **BA Hons Mathematics**, *Oxford University*, *First class*.
Graduated 1st of over 200 students in Applied Mathematics in final examinations.
University scholar and winner of the Junior Mathematical, IMA and Jane Thornton prizes.

Research interests

Sequential decision making under uncertainty, reinforcement learning, deep learning, artificial intelligence, multi-armed bandits, efficient exploration, scaling up.
Applications including advertising, healthcare, agriculture, and finance.

Selected publications

- 🔗 **Deep Exploration via Randomized Value Functions** *with BVR, DR and ZW*.
 - Accepted to JMLR 2018 with minor revision.
- 🔗 **Randomized Prior Functions for Deep Reinforcement Learning** *with JA and AC*.
 - Spotlight presentation at NIPS 2018 (~5% acceptance).
- 🔗 **A Tutorial on Thompson Sampling** *Daniel Russo with BVR, AK, myself and ZW*.
 - Foundations and Trends of Machine Learning 2018.
- 🔗 **Deep Exploration via Bootstrapped DQN** *with CB, AP and BVR*.
 - Invited poster at NIPS 2016 (~20% acceptance).
- 🔗 **Why is Posterior Sampling Better than Optimism for Reinforcement Learning** *with BVR*.
 - Invited talk at ICML 2017 (~20% acceptance)/
- 🔗 **Generalization and Exploration via Randomized Value Functions** *with BVR and ZW*.
 - Invited talk at ICML 2016 (~20% acceptance)/
- 🔗 **Near-Optimal Reinforcement Learning in Factored MDPs** *with BVR*.
 - Spotlight presentation at NIPS 2014 (~5% acceptance), invited talk INFORMS 2014.
- 🔗 **Model-Based Reinforcement Learning and the Eluder Dimension** *with BVR*.
 - Invited poster at NIPS 2014 (~20% acceptance).
- 🔗 **(More) Efficient Reinforcement Learning via Posterior Sampling** *with DR and BVR*.
 - Invited poster at NIPS 2013 (~20% acceptance), invited poster RLDM 2013.

Patent application

- 🔗 **Systems and Methods for Providing RL in a Deep Learning System** *with BVR*.

Professional experience

- 2015–present **Google DeepMind**, *Senior Research Scientist*.
Efficient exploration in reinforcement learning, deep neural networks at scale.
- Jun–Sep 2014 **Google Ads Metrics**, *Data Scientist*.
Investigated targeted shopping ads and their effects on user experience and revenue.
Examined exploration/exploitation tradeoffs and user learning effects on ads blindness.
- Apr–Jun 2014 **Credit Sesame**, *Data Science Consultant*.
Modelled economic and statistical problems of credit recommendation with Ken Singleton.
Implemented a large-scale learning algorithm for efficient product recommendations.
- 2010–2012 **J.P. Morgan Chase**, *Credit Strategist*.
Devised strategies for systematic rich cheap/analysis across EM credit markets.
Developed methods for optimal hedging and execution in illiquid CDS portfolios.
- Jun–Sep 2010 **MVision Private Equity Advisers**, *Summer Intern*.
Analysed promising private equity opportunities in the Pacific Rim.

Teaching experience

- Winter 2015 **MS&E 338 Reinforcement Learning**, *Course assistant*.
Covered lectures and assisted in research projects for an advanced Ph.D. course.
- Fall 2014 **MS&E 145 Introductory Financial Analysis**, *Full instructor*.
Sole instructor for 81 Stanford engineering undergraduates in a required course for major.
Introduced core mathematical finance, working with data and the dangers of bad models.

Technical skills

- Coursework Statistics, optimization, probability, differential equations and mathematical finance.
- Computing Python, TensorFlow, R, data science pipeline.
- Other Strong communication and presentation skills, an open-minded team-player.

Leadership positions

- 2014–2016 **Community Assistant**, *Stanford University*.
Foster graduate student community through community events and pastoral care.
- 2014–2015 **Captain of Graduate Rugby**, *Stanford University*.
Organize training, fixtures and tours for the largest MBA team. Olympic club squad.
- 2010–2011 **Blues President**, *Oxford University*.
Head of university club and varsity sport. Introduced new online account management system.
- 2009–2010 **Captain of Varsity Swimming**, *Oxford University*.
Full blue 2008, 2009 and 2010. Broke three university records. National men's champions.
- June 2004 **Cross-Chanel Relay Swim**, *Eton College*.
Youngest swimmer in winning team (aged 14) and subject of BBC documentary.

Other

- Citizenship Dual USA/UK passports
- References A full list of references is available upon request.