

# Ian Osband

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## Education

- 2012–2016 **Ph.D. Candidate**, *Stanford University*, 4.0/4.0 GPA.  
(defended) Department of Management Science & Engineering with a Ph.D. minor in Statistics  
Awarded one of 300 Stanford graduate fellowships for interdisciplinary research.  
Thesis: *Deep Exploration via Randomized Value Functions*  
Advisor: Benjamin Van Roy  
Committee: John Duchi, Ramesh Johari, Mykel Kochenderfer, Percy Liang
- 2010–2011 **Masters of Mathematics**, *Oxford University*, *First class*.  
Graduated 1<sup>st</sup> 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 1<sup>st</sup> 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, statistical machine learning, multi-armed bandits, online optimization and reinforcement learning.  
Applications including advertising, healthcare, agriculture, and finance.

## Publications

- **Generalization and Exploration via Randomized Value Functions** with BVR and ZW.
  - Invited for talk at ICML 2016 (~20% acceptance)
- **Near-Optimal Reinforcement Learning in Factored MDPs** with BVR.
  - Spotlight presentation at NIPS 2014 (~5% acceptance)
  - Invited talk at INFORMS 2014
- **Model-Based Reinforcement Learning and the Eluder Dimension** with BVR.
  - Invited for poster presentation at NIPS 2014 (~20% acceptance)
- **(More) Efficient Reinforcement Learning via Posterior Sampling** with DR and BVR.
  - Invited for poster presentation at NIPS 2013 (~20% acceptance)
  - Invited for poster presentation at RLDM 2013

### Pre-prints

- **Bootstrapped Thompson Sampling and Deep Exploration** with BVR.
  - Invited for talk at INFORMS 2015
  - Invited for talk at Cornell's data-driven decision-making workshop.
- **(Even More) Efficient Reinforcement Learning via Posterior Sampling** with BVR.
- **Deep Exploration via Bootstrapped DQN** with CB, AP and BVR.

## Professional experience

- 2015–present **Google DeepMind**, *Research Scientist*.  
Efficient exploration in reinforcement learning, deep neural networks at scale.  
Greater than 2x improvement on 50% of Atari 2600 benchmarks.

- 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.

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## 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.

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## Technical skills

- Coursework Probability, optimization, statistics, stochastic processes, machine learning, mathematical finance and differential equations.

### Computing

- Proficient Python, R, Lua, MATLAB, SQL,  $\text{\LaTeX}$ , Git, Bash, MS Office, VBA.  
Basic C, C++, Java, Hadoop.

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## 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.

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## Other

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