



## Benjamin Van Roy

Professor of Electrical Engineering, of Management Science and Engineering

### CONTACT INFORMATION

- **Administrator**

Kara Marquez - Administrative Associate

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### Bio

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#### BIO

Benjamin Van Roy is a Professor at Stanford University, where he has served on the faculty since 1998. His research focuses on understanding how an agent interacting with a poorly understood environment can learn over time to make effective decisions. He is interested in the design of efficient reinforcement learning algorithms, understanding what is possible or impossible in this domain, and applying the technology toward the benefit of society. Beyond academia, he leads a DeepMind Research team in Mountain View, and has also led research programs at Unica (acquired by IBM), Enuvis (acquired by SiRF), and Morgan Stanley.

He is a Fellow of INFORMS and IEEE and has served on the editorial boards of Machine Learning, Mathematics of Operations Research, for which he co-edits the Learning Theory Area, Operations Research, for which he edited the Financial Engineering Area, and the INFORMS Journal on Optimization.

He received the SB in Computer Science and Engineering and the SM and PhD in Electrical Engineering and Computer Science, all from MIT. He has been a recipient of the MIT George C. Newton Undergraduate Laboratory Project Award, the MIT Morris J. Levin Memorial Master's Thesis Award, the MIT George M. Sprowls Doctoral Dissertation Award, the National Science Foundation CAREER Award, the Stanford Tau Beta Pi Award for Excellence in Undergraduate Teaching, and the Management Science and Engineering Department's Graduate Teaching Award. He has held visiting positions as the Wolfgang and Helga Gaul Visiting Professor at the University of Karlsruhe, the Chin Sophonpanich Foundation Professor and the InTouch Professor at Chulalongkorn University, a Visiting Professor at the National University of Singapore, and a Visiting Professor at the Chinese University of Hong Kong, Shenzhen.

#### ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Professor, Management Science and Engineering
- Member, Bio-X
- Member, Institute for Computational and Mathematical Engineering (ICME)

#### HONORS AND AWARDS

- Fellow, INFORMS (2015)
- Fellow, IEEE (2019)

## PROFESSIONAL EDUCATION

- BS, Massachusetts Institute of Technology , Computer Science and Engineering (1993)
- MS, Massachusetts Institute of Technology , Electrical Engineering and Computer Science (1995)
- PhD, Massachusetts Institute of Technology , Electrical Engineering and Computer Science (1998)

## Teaching

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### COURSES

#### 2021-22

- Reinforcement Learning: Behaviors and Applications: EE 277 (Aut)
- Reinforcement Learning: Frontiers: MS&E 338 (Spr)

#### 2020-21

- Reinforcement Learning: Behaviors and Applications: EE 277 (Aut)
- Reinforcement Learning: Frontiers: MS&E 338 (Spr)

#### 2019-20

- Introduction to Optimization (Accelerated): ENGR 62X, MS&E 111X, MS&E 211X (Win)
- Reinforcement Learning: MS&E 338 (Spr)

#### 2018-19

- Dynamic Programming and Stochastic Control: MS&E 351 (Win)
- Reinforcement Learning: MS&E 338 (Spr)

## STANFORD ADVISEES

### Doctoral Dissertation Reader (AC)

Alex Bergman, Ilai Bistriz, Tina Diao, Sanath Kumar Krishnamurthy, Chuan-Zheng Lee, Tara Mina, Tong Mu, Ruohan Zhan

### Postdoctoral Faculty Sponsor

Adithya M Devraj

### Doctoral Dissertation Advisor (AC)

Shi Dong, Vikranth Dwaracherla, Yueyang Liu

### Master's Program Advisor

Huafan Cai, Saksham Consul, Ruoning Mi, Tz-Wei Mo, Tianqi Wen, Hanxiao Zhao

### Doctoral Dissertation Co-Advisor (AC)

Rui Yan

### Doctoral (Program)

Dilip Arumugam, Shane Barratt, Hong Jun Jeon, Sanath Kumar Krishnamurthy, Saurabh Kumar, Bill Zhu

## Publications

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### PUBLICATIONS

- **Deep Exploration via Randomized Value Functions** *JOURNAL OF MACHINE LEARNING RESEARCH*  
Osband, I., Van Roy, B., Russo, D. J., Wen, Z.

2019; 20

- **A Tutorial on Thompson Sampling** *FOUNDATIONS AND TRENDS IN MACHINE LEARNING*  
Russo, D. J., Van Roy, B., Kazerouni, A., Osband, I., Wen, Z.  
2018; 11 (1): 1–96
- **Scalable Coordinated Exploration in Concurrent Reinforcement Learning**  
Dimakopoulou, M., Osband, I., Van Roy, B., Bengio, S., Wallach, H., Larochelle, H., Grauman, K., CesaBianchi, N., Garnett, R.  
NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2018
- **An Information-Theoretic Analysis for Thompson Sampling with Many Actions**  
Dong, S., Van Roy, B., Bengio, S., Wallach, H., Larochelle, H., Grauman, K., CesaBianchi, N., Garnett, R.  
NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2018
- **Learning to Optimize via Information-Directed Sampling** *OPERATIONS RESEARCH*  
Russo, D., Van Roy, B.  
2018; 66 (1): 230–52
- **Conservative Contextual Linear Bandits**  
Kazerouni, A., Ghavamzadeh, M., Abbasi-Yadkori, Y., Van Roy, B., Guyon, Luxburg, U. V., Bengio, S., Wallach, H., Fergus, R., Vishwanathan, S., Garnett, R.  
NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2017
- **Ensemble Sampling**  
Lu, X., Van Roy, B., Guyon, Luxburg, U. V., Bengio, S., Wallach, H., Fergus, R., Vishwanathan, S., Garnett, R.  
NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2017
- **An Information-Theoretic Analysis of Thompson Sampling** *JOURNAL OF MACHINE LEARNING RESEARCH*  
Russo, D., Van Roy, B.  
2016; 17