

# Aniruddh Raghu

32 Vassar Street, Cambridge, MA, 02139, USA

aniruddhraghu@gmail.com

<http://aniruddhraghu.com/>

## Education

### Massachusetts Institute of Technology

Ph.D. candidate in **Computer Science**; **GPA: 5.0**

Co-advised by Prof. John Guttag and Prof. Collin Stultz

Research at the intersection of machine learning and healthcare.

**Graduate courses:** Computer Networking, Computer Vision, Computational Systems Biology

Massachusetts, USA

Sept. 2018 – present

### Trinity College, Cambridge University

BA (First Class), MEng (Distinction) in **Information and Computer Engineering**

**Masters Thesis:** Reinforcement Learning for Clinical Decision Support

**Key Courses:** Computer Vision, Deep Learning & Structured Data, Probabilistic Machine Learning, Linear Algebra, Probability, Practical Optimisation, Software Engineering & Design

Cambridge, UK

Oct. 2014 – June 2018

### Massachusetts Institute of Technology

Third Year Exchange Programme; **GPA: 5.0**

**Courses:** Algorithms, Inference, Applied Probability, Machine Learning for Healthcare, Biomedical Signal & Image Processing, Computer Systems Engineering, Global Business of AI and Robotics, New Enterprises

Massachusetts, USA

Sept. 2016 – May 2017

## Awards

### Kennedy Scholarship

Awarded to outstanding British students undertaking graduate study at MIT/Harvard.

2018

### Trinity College Senior Scholarship

For outstanding academic performance in second/third year undergraduate exams.

2017

### Trinity College Junior Scholarship

For outstanding academic performance in first year undergraduate exams.

2016

### International Physics Olympiad

Bronze medal for UK team. Selected as one of five students to represent the country.

2014

## Publications

### *Through-Wall Human Mesh Recovery Using Radio Signals*

M. Zhao, Y. Liu, **A. Raghu**, T. Li, H. Zhao, A. Torralba, D. Katabi

To appear at International Conference on Computer Vision (ICCV) 2019.

2019

### *Representation Balancing MDPs for Off-Policy Policy Evaluation*

Y. Liu, O. Gottesman, **A. Raghu**, M. Komorowski, A. Faisal, F. Doshi-Velez, E. Brunskill

Neural Information Processing Systems (NeurIPS) 2018; spotlight at CausalML workshop at International Conference on Machine Learning (ICML) 2018.

2018

### *Continuous State-Space Models for Optimal Sepsis Treatment: a Deep Reinforcement Learning Approach*

**A. Raghu**, M. Komorowski, L. Celi, P. Szolovits, M. Ghassemi

Machine Learning for Healthcare 2017; Neural Information Processing Systems (NeurIPS) 2017 workshop on Machine Learning for Health (extensions).

2017

## Preprints and Workshop Papers

*Rapid Learning or Feature Reuse? Towards Understanding the Effectiveness of MAML*

A. Raghu\*, M. Raghu\*, S. Bengio, O. Vinyals

2019

*Model-Based Reinforcement Learning for Sepsis Treatment*

A. Raghu, M. Komorowski, S. Singh

2018

Spotlight at Machine Learning for Health workshop at Neural Information Processing Systems (NeurIPS) 2018.

*Behaviour Policy Estimation for Off-Policy Policy Evaluation: Calibration Matters*

A. Raghu, O. Gottesman, Y. Liu, M. Komorowski, A. Faisal, F. Doshi-Velez, E. Brunskill

2018

Spotlight at CausalML workshop at International Conference on Machine Learning (ICML) 2018.

## Industrial Experience

### Intern Project: Computer Vision for Ground Automation

Cambridge, UK

Amazon Prime Air: Software Development Internship

July – Sept. 2017

Created a computer vision system to aid ground automation. Developed a custom dataset and used deep learning techniques (fine-grained convolutional neural networks, adversarial training) to obtain an effective system. [Patent here](#).

### Intern Project: Emulation Systems & Data Analytics

Cambridge, UK

ARM: Software Development Internship

June – July 2016

Extended the Fast Models software product to support new platforms and advanced features for a future software release.

This software product emulates the ARM architecture on x86 machines to expedite application development.

Created a text data mining and semantic analysis tool for ARM Research.

Developed a data analytics platform for GPUs, using workflow data to inform architectural developments.

### Intern Project: Software Development for Low-Power Radio Networks

Cambridge, UK

Cambridge Consultants: Software Development Internship

July – Aug. 2016

Full stack development of embedded, Linux, and server side systems to create a scalable IoT platform. Worked with public/private key cryptography and protocols such as 802.15.4g, 6LoWPAN/lwIP and CoAP.

## Peer Review

Machine Learning for Healthcare

2018, 2019

Neural Information Processing Systems: Machine Learning for Health workshop

2017, 2018

## Independent Projects

### SpatialRL

Cambridge, UK

HackCambridge

Jan. 2017

Developed a system that used the Unity game engine to create custom game environments to train reinforcement learning agents. Won a prize at Hack Cambridge Recurse, as a team of four, for the best use of SpatialOS, a distributed simulation environment.

### Vectorised Educational Video Compression

California, USA

Facebook Global Hackathon Finals

Oct.– Dec. 2016

Worked with an MIT startup, *dotLearn*, to develop a system that achieves over hundred-fold compression ratios on videos to improve education access in developing countries. Won third place at the Facebook Global Hackathon Finals, as part of a team of four. Demo: <https://ylgh.github.io/>

## Technical Skills

**Areas:** Machine Learning, Reinforcement Learning, Computer Vision, Software Development

**Languages:** Python, C/C++, MATLAB

**Libraries:** NumPy, OpenCV, TensorFlow, MXNet, PyTorch

**Misc.:** Git, Linux

## Music

### Indian Classical Violin

Classically trained for over 14 years. Have given numerous solo and group performances in venues across the UK.

### Western Classical Flute

Classically trained for 10 years.

### Acoustic Guitar

Self-taught for over 7 years. Interested in solo acoustic fingerstyle compositions.