

# Josh Roy

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## EDUCATION

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### Brown University

Class of 2020

Sc. M. in Computer Science, GPA: 4.0/4.0

- **Selected Courses:** Decision Making under Uncertainty, Language Processing in Humans & Machines, Advanced Algorithms, Computer Vision for Graphics/Interaction
- **Thesis:** Visual Transfer for Reinforcement Learning via Wasserstein Domain Confusion

### Brown University

Class of 2019

Sc. B. in Computer Science with Honors, Major GPA: 3.82/4.0

- **Selected Courses:** Robotics (Grad level), Artificial Intelligence (Grad level), Computer Vision (Grad level), Prescriptive Analytics (Grad level)
- **Honors Thesis:** Learning Feature Extraction for Transfer from Simulation to Reality
- **Activities:** Hack@Brown Hardware Team Lead, Brown CS Head Teaching Assistant & Teaching Assistant, Taekwondo Club Instructor & Tournament Organizer

## PUBLICATIONS

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- **Visual Transfer for Reinforcement Learning via Wasserstein Domain Confusion**  
Josh Roy, George Konidaris  
Proceedings of the AAAI Conference on Artificial Intelligence 2021
- **Advanced Autonomy on Low-Cost Educational Platform**  
L. Eller\*, T. Guérin\*, B. Huang\*, G. Warren\*, S. Yang\*, **J. Roy**, S. Tellex  
**RoboCup Best Paper Finalist** (3 out of 1,127 accepted papers), Oral Presentation  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2019
- **PiDrone: An Autonomous Educational Drone using Raspberry Pi and Python**  
Isaiah Brand\*, **Josh Roy\***, Aaron Ray, John Oberlin, Stefanie Tellex  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2018
- **PiDrone: Design of a Low Cost Autonomous Drone**  
**Josh Roy\***, Isaiah Brand\*, John Oberlin, Stefanie Tellex  
CARRE International Research Symposium 2017 (poster session)

## PROFESSIONAL EXPERIENCE

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### BridgerGP

February 2025 - Current

#### Founding AI Engineer

- First engineer at software startup creating AI agents for financial services
- Creating multi-step decision making systems to communicate with customers, utilize long-term memory, & work with humans in shared digital environments
- Lead collaborative projects to improve AI methodology, performance on internal benchmarks, & create software products to help our end users
- Research/create cutting edge methods: tool calling, multimodality, & multi-step planning

## Two Sigma Investments

October 2021 - December 2024

### Quantitative Software Engineer

- Led projects & collaborated with traders/researchers to create ML models to predict markets, decision-making systems to buy/sell stocks, & production data pipelines as part of Systematic Macro Engineering team
- Independently identified & improved stock-trading planner by fitting & evaluating linear & non-linear regressions on historical trading data
- Built & validated more than 100 new input features in ML models
- Engineered scalable, low-latency distributed systems for machine learning & real-time data processing in trading, implemented at large scale

## Cognex

### Machine Learning Engineer

June 2020 - October 2021

### Machine Learning Intern

Summer 2019

- Worked with AI algorithms, 3d vision, & product teams to implement deep learning algorithms & create software for embedded smart cameras to address customer needs
- Researched & productized novel reinforcement learning from human feedback (RLHF), explainable defect-detection (based on YOLOv3), & clustering (based on t-SNE) algorithms for rapid adaptation/deployment to robotic factory automation applications including car assembly, shipping/logistics, & food processing
- Created model distillation & neural network quantization algorithms & implemented low-latency semantic segmentation (UNet) in embedded C++, retaining accuracy

## NVIDIA

Summer 2018

### Deep Learning Intern

- Conducted deep reinforcement learning research for control/motion planning of robots focusing on sim2real with large scale reinforcement learning
- Built mobile robot to guide visitors to meeting rooms combining motion planning, deep learning for computer vision, and neuro-symbolic reasoning

## Brown University

Fall 2017 - Spring 2019

### Systems Programmer, Operator, Consultant (SPOC)

- Responsible for managing and maintaining distributed system of university computers and related software

## RESEARCH & TEACHING EXPERIENCE

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### Machine Learning Collective

June 2020 - November 2021

### Independent Researcher (Part-Time)

- Conducted novel research on two projects: (1) Unsupervised contrastive representation learning from videos via temporal correspondence, (2) Generalization for reinforcement learning via mapping to hierarchical state representation

### Brown University VC Inclusion Lab

Fall 2019 - June 2020

### Graduate Data Scientist

- Led staff to collect, clean, and analyze diverse data and draw business insights.

- Created ML pipelines to analyze & visualize data for internal and external stakeholders

## **Brown University Robotics**

Summer 2016 - Summer 2020

### **Research Assistant**

- Advised by Stefanie Tellex, George Konidaris, & James Tompkin at the bigAI initiative
- Research topics included Reinforcement Learning, Classical Planning, Model-Based Reasoning, Planning under Uncertainty, Generative Modeling for Vision/Language, and Representation Learning, among others
- Created Brown CS course: Intro to Robotics. Used by MIT Duckietown, Summer@Brown, other universities and high schools

## **Brown University Computer Science**

Fall 2016 - Spring 2020

- Computer Vision (Teaching Assistant) Spring 2019 & Spring 2020
- Deep Learning (TA) Fall 2019
- Logic for Systems (TA) Spring 2018
- Introduction to Robotics (Head Teaching Assistant) Fall 2017 & Fall 2018
- Graduate Robotics Seminar (HTA) Spring 2017
- Designing Humanity Centered Robots (HTA) Fall 2016

## **AWARDS & MENTIONS**

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- **Two Sigma Internal AI Hackathon Best Project**, 2023
- **National Science Foundation Graduate Research Fellowship**, Honorable Mention, 2020
- **RoboCup Best Paper Finalist**, IROS, 2019
- **Sigma Xi Scientific Research Honor Society**, Elected, 2019
- **Michael Black Teaching Assistantship Award**, Brown University, 2019
- **Senior Prize in Computer Science**, Brown University, 2019
- **Academic Honors in Computer Science**, Brown University, 2019
- **Welcoming Our New Robot Overlords**, New Yorker, October 16 2017

## **RESEARCH TALKS**

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- **Wasserstein Adversarial Proximal Policy Optimization**  
Deep Learning Classics and Trends, ML Collective, 2021
- **To Infinite (Visual) Transfer and Beyond**  
Brown University Robotics, 2021
- **Making AI See like Humans**  
Finalist at Research Matters Competition 2020, Brown University Graduate School
- **How to Make AI See like Humans**  
Nerd Nite Providence, Brown University Love Data Week, 2020

## **ACADEMIC SERVICE**

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**Volunteer:** AAAI 2021, Neurips 2020

**Reviewer:** AAAI 2021, Challenges of Real World Reinforcement Learning 2020, ICRA 2020, NeurIPS Reproducibility Challenge 2019, International Symposium on Technology And Society (ISTAS) 2019, IROS 2019, IROS 2018

**Technical Blog Posts:** <https://medium.com/@thosehippos>