Josh Roy

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EDUCATION

Princeton University — Class of 2031

Ph.D. in Electrical and Computer Engineering

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

- **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

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

[1] https://scholar.google.com/citations?user=380VVtUAAAAJ&hl=en&oi=ao

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 as part of Isaac Sim team
- 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

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

- **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

- **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

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