Joey Hejna

(Donald Joseph Hejna III)

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Education

University of California, Berkeley August 2017 - Present
B.S. Electric Engineering and Computer Science GPA: 4.0/4.0

Selected Coursework: Information Theory* (IP), Linear System Theory* (IP), Deep Reinforcement Learning*, Deep Unsupervised Learning* (A+), Machine Learning, Artificial Intelligence (A+), Designing Neural Networks (A+), Probability and Random Processes (A+), Convex Optimization, Signals and Systems, Algorithms, Discrete Math and Probability Theory, Operating Systems, Computer Architecture (A+), Data Structures & Algorithms, Real Analysis, Information Systems. *- graduate level, IP -in progress, No marking - A.

Experience

Robot Learning Lab, Undergraduate Researcher *November 2019 – Present*

- Working under the supervision of Professors Pieter Abbeel and Lerrel Pinto (NYU) on problems relating to efficient reinforcement learning and robotics. First-authored two papers in nine-months (see below).

Citadel Global Quantitative Strategies, Intern *June 2019 – August 2019*

- Developed C++ proxy and API to improve job monitoring, KDB testing scripts for multi-server trading systems.
- Created APIs for trade messages, unified with query systems under a central platform for easy use by traders.
- Explored techniques for reducing RAM usage of tree training libraries. Discovered means for reducing 75% load.

Intel AI Products Group, Intern *May 2018 –August 2018*

- Produced demo-products for Intel OpenVino Model Optimizer. Computer vision project featured on intel's blog.
- Documented workflows for AWS model training, explored gradient based explanations for CV and NLP models.

Auto Lab, Undergraduate Researcher *January2019 – June 2019*

- Integrating object detection models (SSD) with grasp quality networks for robot manipulation using DexNet.

Clipper Model Zoo, Head of Model Team *January 2019 – June 2019*

- Worked in UC Berkeley's RISE lab a public model serving site based on the Clipper inference platform.
- Lead the model curation team in building and deploying models. Project since deprecated.

Switchboard, Contracted Android Developer *Jan 2018 – August 2018*

- Programmed a multi-user voice-communication android app for Berkeley Skydeck Startup via TokBox API.
- Routed user events using SocketIO, guaranteed delivery with ack messages. Custom API for feed, notifications.

Publications & Projects

Hierarchically Decoupled Imitation for Morphological Transfer *Published at ICML 2020*
Donald Joseph Hejna III, Pieter Abbeel, Lerrel Pinto. https://arxiv.org/abs/2003.01709

- We argue and show that transferring policies across agents offers massive improvements in sample efficiency.
- We overcome different input/output spaces of agents using a hierarchical structure and contribute two key algorithmic improvements motivated by information theory to overcome the domain shift induced in transfer.

Task-Agnostic Morphology Evolution *Under Review at ICLR 2021*
Donald Joseph Hejna III, Pieter Abbeel, Lerrel Pinto. https://openreview.net/pdf?id=CGQ6ENUMX6

- Learning an agent's form holds the promise of better performance. We introduce the first unsupervised algorithm for agent design optimization using unsupervised objectives, discovering viable agents without rewards.
- Empirically, we outperform task-supervised algorithms in multi-task settings while being 4x as fast.

Improving Latent Representations via Explicit Disentanglement *Course Project – Unsupervised Learning*
Donald Joseph Hejna III*, Ashwin Vangipuram*, Kara Liu*. http://joeyhejna.com/files/disentanglement.pdf

- Introduce 3 novel methods for disentangling latent representations in VAEs: cycle loss, divergence penalty, and factor prediction. I proposed and coded all three approaches and ran all the MNIST-like experiments.
- We outperform baselines quantitatively on downstream classification and qualitatively on the 3D Chairs data.

Teaching & Outreach

EECS 127: Optimization Models, Teaching Assistant *Fall 2020*
- Teaching sections on linear alg, duality, convex models. Hosting office hours, running website & exam logistics.

CS 189: Machine Learning, Teaching Assistant *Spring 2020*
- Teaching sections on classic ML methods. Hosting office hours, creating exam questions and discussion sheets.
- Earned overall rating of 4.61/5.00 from students in comparison to department average of 4.41

CS 70: Discrete Math and Probability Theory, Teaching Assistant *Fall 2019*
- Taught two weekly discussions, held office hours. Earned overall 4.61/5.00 rating in comparison to 4.33 average.

Hack:Now – UC Berkeley CalHacks, Workshop Instructor *April 2020*
- Gave an introductory machine learning tutorial for an online version of Cal Hacks, the largest collegiate hackathon. Prepared all materials and presented. https://github.com/jhejna/mlworkshop

Mobile Developers of Berkeley, Workshop Instructor *January 2019 – June 2020*
- Deliver Bi-annual workshop on ML technologies to student lead app-based startup incubator.
- Advised and helped student teams incorporate Tensorflow models into their projects.

UC Berkeley Launchpad, Education Committee *January 2019 – October 2020*
- Developed introductory ML curriculum for students in Berkeley AI interest group: http://joeyhejna.com/mlbook.
- Delivered workshops on topics from ML fundamentals to advanced reinforcement and unsupervised learning.
- Lead students in a project on self-play in reinforcement learning, having an agent learn pong by playing itself.

Silicon Valley AI Frontiers Meetup, Presenter *May 2020*
- Presented research work to AI Frontiers, a group of post-education tech employees interested in AI.

Awards

Regents and Chancellors Scholar. Awarded to <2% of top entering undergraduate students at UC Berkeley
Dean's List. Awarded for maintaining academic position in top <10% of engineering students at UC Berkeley.
Rambus Innovator of the Future 2017. Scholarship awarded for exceptional academics and research.
Nominee - CRA Undergraduate Research. Nominated by EECS dept. for CRA outstanding undergrad researcher.