# Joey Hejna

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## Education

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

- Regents and Chancellors Scholarship, top <2% of incoming undergraduates. Dean's List, top <10% academics.
- Nominated for CRA outstanding undergraduate research award, Rambus 2017 Innovator of the Future
- *Courses:* ML, AI, OS, Algos, Lin. Alg, Probability, Optimization, Info Thy, DeepRL, Data Struct, Unsupervised.

## 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 decision tree training libraries. Achieved 75% load reduction.

**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** *Jan 2019 – June 2019*

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

**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

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

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

- We introduce the first unsupervised algorithm for agent design optimization using unsupervised objectives.
- 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 three methods for disentangling latent representations: cycle loss, divergence penalty, factor prediction.

## Activities

**EECS Department, Teaching Assistant** *August 2019 - Present*

- EECS 127: Optimization Models. Fall 2020. Teaching sections. Course includes lin alg., duality, convex models
- CS 189: Machine Learning. Fall Spring 2020. Weekly sections, office hours, creating questions and content.
- CS 70: Discrete Math and Probability Theory. Fall 2019. Taught two weekly discussion sections, office hours.

**UC Berkeley Launchpad, Project Lead** *August 2019 - Present*

- Built and taught an introductory curriculum for machine learning and advanced workshops on deep learning.
- Led students in a project on self-play in reinforcement learning, having an agent learn pong by playing itself.

**Programming:** Python, Java, C, Pytorch, Tensorflow 1.0, NumPy, AWS, Docker, Unix, HTML/CSS, C++ (limited)