# Amlesh Sivanantham

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## Education

08.2017 - 05.2019 — University of Southern California
**M.S. in Computer Science (GPA: 3.78)**
*Concentration: Intelligent Robotics*

09.2013 - 06.2017 — University of California, Santa Cruz
**B.S. in Computer Engineering (Honors)**
**B.S. in Computer Science**
Thesis: *Detecting Anomalies in Time-Series Data using Long Short-Term Memory Networks* - Advisor: Dr. Patrick Mantey

## Skills

Languages: **Python**, **C++**, C, Java, JavaScript, Scheme, LaTeX, Bash, Verilog
Libraries: **TensorFlow**, PyTorch, OpenAI Gym, PyTorch, NumPy, SciPy, Matplotlib

## Work Experience

09.2017 - Present — **Graduate Research Assistant**
*University of Southern California - Robotic Embedded Systems Laboratory*
Perform graduate research in Deep Reinforcement Learning and it's application to Robotics. Some of the areas I have worked on have been to learn to infer inverse dynamics of a system (system identification) and learning to integrate control theory with current deep reinforcement learning algorithms. I also participate in reading groups to be caught up with the current literature.

09.2016 - 06.2017 — **Undergraduate Research Assistant**
*University of California, Santa Cruz - Jack Baskin School of Engineering*
Performed undergraduate research in Machine Learning and Deep Learning for the Smart Energy Analytic Disaggregation System project for Dr. Ali Adabi to explore methods to analyze and identify time-series data.

## Publications

**W1.** V. Chockalingam, T. T. Sung, F. Behbahani, R. Gargeya, A. Sivanantham, and A. Malysheva. Extending world models for multi-agent reinforcement learning in malmo. In *Joint Proceedings of the AIIDE 2018 Workshops*. AIIDE, dec 2018

## Projects

### Learning Inverse Dynamics of a System for Deep RL *(USC RESL)*
Instead of having a RL policy learn a mapping from states to actions, we had it learn a mapping from states to desired states. We also learnt a inverse dynamics model concerrently from data generated by the policy. We found that the policy's performance was marginally worse than the standard approach.

### PPO with Curriculum Learning for Quadrotor Navigation *(USC RESL)*
Used Proximal Policy Optimization (PPO) with curriculum learning to train a policy to learning to fly a quadrotor in a simple OpenGL quadrotor simulator we wrote. We we able to solve the task when we used perfect state information, but when we changed the state to RGB image data from a camera and IMU information, it was unable to learn the task.

### Imagination Augmented Agents for Rubik's Cubes *(Jeju DL Camp 2018, S. Korea)*
Participated in the Jeju Deep Learning Camp 2018 where I worked to reimplement the paper *Imagination Augmented Agents for Deep Reinforcement Learning* and adapt it to work for a Rubik's Cube OpenAI Gym environment that I wrote.