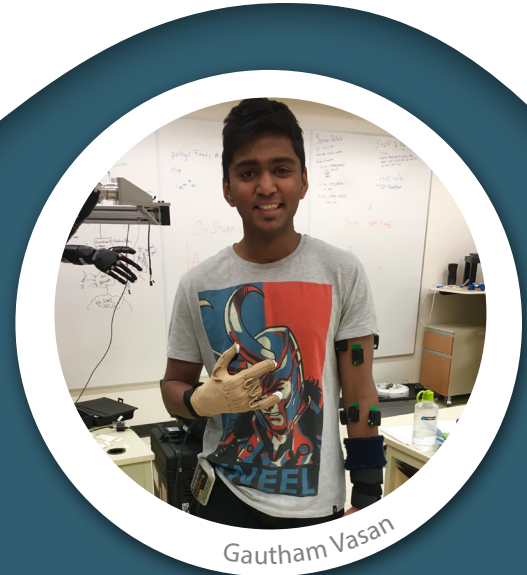# LEARNING FROM DEMONSTRATION:
TEACHING A MYOELECTRIC PROSTHESIS WITH AN INTACT LIMB VIA REINFORCEMENT LEARNING

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Computing Science Department

Friday, February 3, 2017

3:00 – 4:30pm

BSP 319N

Gautham Vasan

I will describe how we think about Reinforcement Learning (RL) from a computational perspective. At the BLINC Lab, we use RL to improve sensory motor control of advanced prosthetic systems; we want to develop intelligent prosthetic arms that can move naturally and perform elegant, coordinated movements like a biological arm. We employ RL methods to solve optimal control problems and build/maintain an accurate knowledge of an agent's complex, stochastic environment. Using actor-critic reinforcement learning, we present a method that allows someone with an amputation to use their non-amputated arm to teach their prosthetic arm how to move through a wide range of coordinated motions and grasp patterns. We evaluate our method during the myoelectric control of a multi-joint robot arm and demonstrate that the robot arm is able to successfully learn a control policy for a particular sequence of gestures and movements involving multiple joints.