

Neuron-Based Control Mechanisms for a Robotic Arm and Hand

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Abstract : A robotic arm and hand controlled by simulated neurons is presented. The robot makes use of a biological neuron simulator using a point neural model. The neurons and synapses are organised to create a finite state automaton including neural inputs from sensors, and outputs to effectors. The robot performs a simple pick-and-place task. This work is a proof of concept study for a longer term approach. It is hoped that further work will lead to more effective and flexible robots. As another benefit, it is hoped that further work will also lead to a better understanding of human and other animal neural processing, particularly for physical motion. This is a multidisciplinary approach combining cognitive neuroscience, robotics, and psychology.

Keywords : cell assembly, force sensitive resistor, robot, spiking neuron

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