

Bachelor Thesis, Master Thesis

Classical Conditioning with a simulated Robot and Spiking Neural Networks

BACKGROUND

Classical Conditioning is a major Behavioral paradigm that can explain a multitude of behaviors in Human and animals. Hereby, stimuli get associated and result in a triggered action. Conditioning can be implemented based on single stimuli up to complex perception and action patterns.

YOUR TASK

You will investigate State of the Art experiments with Classical Conditioning for robot control that is based on unsupervised neural network learning. Based on your research we will conceptualize a robot conditioning task including stimuli and motion control. You will implement this conditioning experiment as a simulation in the Neurorobotics Platform with a robotic or musculoskeletal model. Condition learning will and a Spiking Neural network. Hereby, associative learning rules such as STDP will be exploited, implemented and evaluated.



REQUIRED SKILLS

- Python
- Experience with Machine Learning Applications
- Knowledge in Rate Based and Spiking Neural Networks is a plus

FURTHER READING

www.nest-simulator.org/

www.neurobotics.net

https://en.wikipedia.org/wiki/Classical_conditioning

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