

Group 4: Project 2

- 1) Implement the model described in McClure et al. (2003) and show how this reproduces the effects of dopamine antagonists.
- 2) Redish (2004) has suggested that certain forms of drug addiction arise from a “dopamine surge” in the prediction error computation. Explain how this fits with the McClure model and show how the model can produce runaway values for drug-related states.
- 3) How is this model related to the average reward reinforcement learning model described by Niv et al. (2006)?

References:

McClure, S.M., Daw, N.D., & Montague, P.R. (2003) A computational substrate for incentive salience. *Trends in Neurosciences*, 26, 423-428.

Niv, Y., Daw, N.D., Joel, D., & Dayan, P. (2007). Tonic dopamine: opportunity costs and the control of response vigor. *Psychopharmacology (Berl.)*, 191, 507–520.

Redish, A.D. (2004). Addiction as a computational process gone awry. *Science*, 306, 1944-1947.