LABORATORY OF COMPUTATIONAL NEUROSCIENCE (LCN)

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Thursday, September 25th, 2014
13h30, Room AAC 132

Computational Neuroscience Seminar

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Forgetting in the fruit fly: bug or feature?

Recent experiments revealed that the fruit fly Drosophila melanogaster has a dedicated mechanism for forgetting: blocking the G-protein Rac leads to slower and activating Rac to faster forgetting. This active form of forgetting lacks a satisfactory functional explanation. We investigated optimal decision making for an agent adapting to a stochastic environment where a stimulus may switch between being indicative of reward or punishment. Like Drosophila, an optimal agent shows forgetting with a rate that is linked to the time scale of changes in the environment. Moreover, to reduce the odds of missing future reward, an optimal agent may trade the risk of immediate pain for information gain and thus forget faster after aversive conditioning. A simple neuronal network reproduces these features. Our model supports the view that forgetting is adaptive rather than a consequence of limitations of the memory system.