

MaLGA COLLOQUIA

Monday 6th February, 16:00

Online connection from Room 704 @ DIMA
Via Dodecaneso 35

Risk, Replay and Rehearsal



Abstract

Risk, which arises when outcomes are not completely certain, occupies a central role in both the theory and practice of decision-making, and is especially important in the context of survival. Fortune famously favours the prepared, and so we examine how animals might go about preparing themselves appropriately in the face of potential threats. We formalize risk using a modern theoretical approach called conditional value-at-risk (CVaR), which has roots in the finance industry and emphasizes the worst outcomes. CVaR comes in different flavours in sequential decision-making problems, and we examine what policies are appropriate to optimize these CVaR in stylized problems. Finally, we consider how these policies might be optimized offline, using (p)replay, during safe epochs. We relate these preparation processes to worry and rumination.

Speaker

Peter Dayan

MPI Tübingen

Peter Dayan studied mathematics at Cambridge University and received his doctorate from the University of Edinburgh. After postdoctoral research at the Salk Institute and the University of Toronto he moved to MIT in Boston as assistant professor in 1995. In 1998, he moved to London to co-found the Gatsby Computational Neuroscience Unit, one of the best-known institutions for research in theoretical neuroscience, and was its Director from 2002 to 2017. He was also Deputy Director of the Max Planck/UCL Center for Computational Psychiatry and Ageing Research. In 2018, he moved to Tübingen to become a Director of the Max Planck Institute for Biological Cybernetics. Peter Dayan's research focuses on decision-making processes in the brain, the role of neuromodulators as well as neuronal malfunctions in psychiatric diseases.

