Laurent Perrinet

Researcher in Computational Neuroscience (DR2 CNRS)
Institut de Neurosciences de la Timone
UMR 7289, CNRS / Aix-Marseille Université
27, Bd. Jean Moulin, 13385 Marseille Cedex 5, France

URL: https://laurentperrinet.github.io

Research interests

My research explores the theoretical and empirical foundations of neural adaptation, demonstrating how structural and functional properties co-evolve to optimally process the statistical regularities of ecological contexts.

Areas of specialization

Spatio-temporal inference in low-level sensory areas. Unsupervised learning in topographic maps. Predictive processes and active perception.

Education

2014 HDR Aix-Marseille Université

1999-2003 PhD in Cognitive Neuroscience, ONERA/DTIM, Toulouse (France)

1993 - 1998 MSc in Engineering Supaéro (Toulouse, France), one of the leading French Engineering Schools ("Grandes Ecoles"). Specialization in stochastic models for signal and image processing.

Selected publications

2024 Antoine Grimaldi, Laurent U Perrinet. "Learning heterogeneous delays in a layer of spiking neurons for fast motion detection." **Biological Cybernetics**.

2023 Hugo Ladret, Nelson Cortes, Lamyae Ikan, Frédéric Chavane, Christian Casanova, Laurent U Perrinet. "Cortical recurrence supports resilience to sensory variance in the primary visual cortex." **Nature Communications Biology**.

2021 Victor Boutin, Angelo Franciosini, Franck Ruffier, Frédéric Chavane and Laurent U Perrinet. "Sparse Deep Predictive Coding captures contour integration capabilities of the early visual system." **PLoS Computational Biology**.

2020 Chloé Pasturel, Anna Montagnini and Laurent Perrinet. "Humans adapt their anticipatory eye movements to the volatility of visual motion properties." **PLoS Computational Biology**.

2012 Karl Friston, Rick A. Adams, Laurent Perrinet and Michael Breakspear, "Perceptions as Hypotheses: Saccades as Experiments", **Front in Psychology**.

2012 Claudio Simoncini, Laurent Perrinet, Anna Montagnini, Pascal Mamassian and Guillaume Masson, "More is not always better: dissociation between perception and action", **Nature Neuroscience**.

2010 Laurent Perrinet, "Role of homeostasis in learning sparse representations", **Neural Computation**.

2004 Laurent Perrinet, Manuel Samuelides and Simon Thorpe, "Coding static natural images using spiking event times : do neurons cooperate?", **IEEE Transactions on Neural Networks**.