

Laurent Perrinet

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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**.