MÁTÉ LENGYEL
PUBLICATION LIST
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PUBLICATIONS

Peer-reviewed papers

Berkes P, Orbán G, **Lengyel M**[*], Fiser J[*] (2011) Spontaneous cortical activity reveals hallmarks of an optimal internal model of the environment. *Science* 331:83–87. [*]equal contributions

Pfister JP, Dayan P, **Lengyel M** (2010) Synapses with short-term plasticity are optimal estimators of presynaptic membrane potentials. *Nat Neurosci* 13:1271–1275.

Remme MWH, **Lengyel M**, Gutkin BS (2010) Democracy-independence trade-off in oscillating dendrites and its implications for grid cells. *Neuron* 66:429–437.

Fiser J, Berkes B, Orbán G, **Lengyel M** (2010) Statistically optimal perception and learning: from behavior to neural representations. *Trends Cogn Sci* 14:119–130.

Remme MWH, **Lengyel M**, Gutkin BS (2009) The role of ongoing dendritic oscillations in single-neuron dynamics. *PLoS Comput Biol* 5:e1000493.

Orbán G, Fiser J, Aslin RN, **Lengyel M** (2008) Bayesian learning of visual chunks by human observers. *Proc Natl Acad Sci USA* 105:2745–2750.

Lengyel M, Kwag J, Paulsen O, Dayan P (2005) Matching storage and recall: hippocampal spike timing-dependent plasticity and phase response curves. *Nat Neurosci* 8:1677–1683.

Huhn Z, Orbán G, Érdi P, **Lengyel M** (2005) Theta oscillation-coupled dendritic spiking integrates inputs on a long time scale. *Hippocampus* 15:950–962.

Lengyel M, Huhn Z, Érdi P (2005) Computational theories on the function of theta oscillations. *Biol Cybern* 92:393–408.

Lengyel M, Érdi P (2004) Theta modulated feed-forward network generates rate and phase coded firing in the entorhino-hippocampal system. *IEEE Trans Neural Netw* 15:1092–1099.

Zalányi L, Csárdi G, Kiss T, **Lengyel M**, Warner R, Tobochnik J, Érdi P (2003) Properties of a random attachment growing network. *Phys Rev E* 68:066104.

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Orbán G, Kiss T, **Lengyel M**, Érdi P (2001) Hippocampal rhythm generation: gamma-related theta-frequency resonance in CA3 interneurons. *Biol Cybern* 84:123–132.

Invited commentary

Latham PE, **Lengyel M** (2008) Phase coding: spikes get a boost from local fields. *Curr Biol* 18:R349–351.

Refereed conference proceedings

Huszár F, Noppeney U, **Lengyel M** (2010) Mind reading by machine learning: a doubly Bayesian method for inferring mental representations. In: *Proceedings of the Thirty-Second Annual Conference of the Cognitive Science Society*. pp 2810–2815.

Pfister JP, Dayan P, **Lengyel M** (2009) Know thy neighbour: a normative theory of synaptic depression. In: *Advances in Neural Information Processing Systems 22* (Bengio Y, Schuurmans D, Lafferty J, et al., eds.), Cambridge, MA: MIT Press, pp 1464–1472.

Lengyel M, Dayan P (2008) Hippocampal contributions to control: the third way. In: *Advances in Neural Information Processing Systems 20* (Platt J, Koller D, Singer Y, et al., eds.), Cambridge, MA: MIT Press, pp 889–896.

Lengyel M, Dayan P (2007) Uncertainty, phase and oscillatory hippocampal recall. In: *Advances in Neural Information Processing Systems 19* (Schölkopf B, Platt J, Hoffman T, eds.), Cambridge, MA: MIT Press, pp 833–840.

Orbán G, Fiser J, Aslin RN, **Lengyel M** (2006) Learning objects by learning models: finding independent causes and preferring simplicity. In: *Proceedings of the Twenty-Eighth Annual Conference of the Cognitive Science Society* (Sun R, ed.), Cognitive Science Society, pp 645–650.

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Lengyel M, Kepecs Á, Érdi P (1999) Location-dependent differences between somatic and dendritic IPSPs. *Neurocomputing* 26–27:193–197.

Bazsó F, Kepecs Á, **Lengyel M**, Payrits S, Szalisznyó K, Zalányi L, Érdi P (1999) Single cell and population activities in cortical-like systems. *Rev Neurosci* 10:201–212.

Unrefereed conference proceedings / abstracts

Pfister JP, Dayan P, **Lengyel M** (2010) A normative theory of short-term synaptic plasticity. In: *Computational and Systems Neuroscience*.

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Orbán G, Fiser J, **Lengyel M** (2007) V1 activity as optimal Bayesian inference. In: *Computational and Systems Neuroscience*.

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Lengyel M, Dayan P (2006) Firing rates and times in the hippocampus: what are they good for? In: *Computational and Systems Neuroscience*.

Orbán G, Aslin RN, Fiser J, **Lengyel M** (2006) Bayesian model learning in human visual perception. In: *Computational and Systems Neuroscience*.

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Érdi P, Kepecs Á, **Lengyel M**, Obermayer K, Szatmáry Z (1998) Dynamics of the hippocampus: multiple strategies. In: *International Conference on Neural Information Processing, Kitakyushu*. pp 777–780.

Adorján P, Barna G, Érdi P, Grőbler T, Kepecs Á, **Lengyel M**, Ventriglia F (1996) Multicompartmental modeling of hippocampal pyramidal cells and interneurons with the GENESIS software tool. *Neurobiology (Bp)* 4:247–249.

Book chapter

Érdi P, **Lengyel M** (2003) Matematikai modellek az idegrendszer-kutatásban. In: *Kognitív idegtudomány* (Pléh C, Kovács G, Gulyás B, eds.), Budapest: Osiris, pp 126–148.