

**MÁTÉ LENGYEL**  
PUBLICATION LIST  
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**Peer reviewed papers**

- 2008 Orbán G, Fiser J, Aslin RN, **Lengyel M**. Bayesian learning of visual chunks by human observers. *Proceedings of the National Academy of Sciences USA*, 105:2745-2750.
- 2005 **Lengyel M**, Kwag J, Paulsen O, Dayan P. Matching storage and recall: hippocampal spike timing-dependent plasticity and phase response curves. *Nature Neuroscience*, 8:1677-1683.
- 2005 Huhn Zs, Orbán G, Érdi P, **Lengyel M**. Theta oscillation-coupled dendritic spiking integrates inputs on a long time scale. *Hippocampus*, 15:950-962.
- 2005 **Lengyel M**, Huhn Zs, Érdi P. Computational theories on the function of theta oscillations. *Biological Cybernetics*, 92: 393-408.
- 2004 **Lengyel M**, Érdi P. Theta modulated feed-forward network generates rate and phase coded firing in the entorhino-hippocampal system. *IEEE Transactions on Neural Networks*, 15: 1092-1099.
- 2003 Zalányi L, Csárdi G, Kiss T, **Lengyel M**, Warner R, Tobochnik J, Érdi P. Properties of a random attachment growing network. *Physical Review E*, 68: 066104.
- 2003 **Lengyel M**, Szatmáry Z, Érdi P. Dynamically detuned oscillations account for the coupled rate and temporal code of place cell firing. *Hippocampus*, 13: 700-714.
- 2001 Orbán G, Kiss T, **Lengyel M**, Érdi P. Gamma-related theta-frequency resonance in CA3 interneurons. *Biological Cybernetics*, 84: 123-132.

**Refereed conference proceedings**

- 2008 **Lengyel M**, Dayan P. Hippocampal contributions to control: the third way. *Advances in Neural Information Processing Systems 20*, in press.
- 2007 **Lengyel M**, Dayan P. Uncertainty, phase, and oscillatory hippocampal recall.
- 2006 Orbán G, Fiser J, Aslin RN, **Lengyel M**. Learning objects by learning models: finding independent causes and preferring simplicity. *Proceedings of the Twenty-Eighth Annual Conference of the Cognitive Science Society*, 645-650.
- 2006 Orbán G, Fiser J, Aslin RN, **Lengyel M**. Bayesian model learning in human visual perception. *Advances in Neural Information Processing Systems 18*, 1043-1050.
- 2005 **Lengyel M**, Dayan P. Rate- and phase-coded autoassociative memory. *Advances in Neural Information Processing Systems 17*, 769-776.
- 2005 Huhn Zs, **Lengyel M**, Orbán G, Érdi P. Dendritic spiking accounts for rate and phase coding in a biophysical model of a hippocampal place cell. *Neurocomputing*, 65-66: 331-341.

- 2004 Papp G, Huhn Zs, **Lengyel M**, Érdi P. Effects of dendritic location and different components of LTP expression on the firing activity of hippocampal CA1 pyramidal cells. *Neurocomputing*, 58-60: 692-697.
- 2001 Misják F, **Lengyel M**, Érdi P. Episodic memory and cognitive map in a rate model network of the rat hippocampus. *Lecture Notes in Computer Science*, 2130: 1135-1140.
- 2001 Kiss T, Orbán G, **Lengyel M**, Érdi P. Intrahippocampal gamma and theta rhythm generation in a network model of inhibitory interneurons. *Neurocomputing*, 38-40: 713-719.
- 1999 **Lengyel M**, Kepecs Á, Érdi P. Location dependent differences between somatic and dendritic IPSPs. *Neurocomputing*, 26-27: 193-197.
- 1999 Bazsó F, Kepecs Á, **Lengyel M**, Payrits Sz, Szalisznyó K, Zalányi L, Érdi P. Single cell and population activities in cortical-like systems. *Reviews in the Neurosciences*, 10: 201-212.

#### **Unrefereed conference proceedings / Abstracts**

- 2007 **Lengyel M**, Dayan P. Back to the future: episodic memories for control. *Neural Coding, Computation and Dynamics*
- 2007 Remme M, **Lengyel M**, Gutkin B. The role of ongoing dendritic oscillations in single-neuron computation. *Society for Neuroscience*, Program No. 251.20.
- 2007 **Lengyel M**, Dayan P. Hippocampal contributions to control: a normative perspective. *Computational and Systems Neuroscience*
- 2007 Orbán G, Fiser J, **Lengyel M**. V1 activity as optimal Bayesian inference. *Computational and Systems Neuroscience*
- 2007 Fiser J, Orbán G, Aslin RN, **Lengyel M**. Ideal Bayesian learning in human scene perception. *Computational and Systems Neuroscience*
- 2006 **Lengyel M**, Peter Dayan. Firing rates and times in the hippocampus: what are they good for? *Computational and Systems Neuroscience*
- 2006 Orbán G, Aslin RN, Fiser J, **Lengyel M**. Bayesian model learning in human visual perception. *Computational and Systems Neuroscience*
- 2005 Orbán G, Aslin RN, Fiser J, **Lengyel M**. Bayesian model selection in human visual perception. *Computational Cognitive Neuroscience*
- 2005 Orbán G, Aslin RN, Fiser J, **Lengyel M**. Bayesian model selection in human visual perception. *Society for Neuroscience*
- 2005 **Lengyel M**, Jeonhyun Kwag, Ole Paulsen, Peter Dayan. Matching storage and recall: constructing optimal rate- and phase-coded autoassociative memories. *Computational and Systems Neuroscience*, Program No. 640.5
- 2004 **Lengyel M**, Dayan P. Rate- and phase-coded autoassociative memories: Bayesian inference. *Neurons and Memory*.
- 2004 **Lengyel M**, Dayan P. Rate- and phase-coded autoassociative memories: Bayesian inference. *Society for Neuroscience*, Program No. 710.2.

- 2004 Huhn Zs, **Lengyel M**, Érdi P. Rate and phase coding in a biophysical model of a hippocampal place cell. *Cybernetics and System Research*, pp. 193-198.
- 2000 Kiss T, Orbán G, **Lengyel M**, Érdi P. Hippocampal rhythm generation: gamma related theta frequency resonance. *Cybernetics and System Research*, pp. 330-335.
- 1999 **Lengyel M**, Szatmáry Z, Érdi P. A detuned oscillator model of place unit phase precession in the rat hippocampus. *Society for Neuroscience*, 25: 1387.
- 1998 Szatmáry Z, **Lengyel M**, Érdi P, Obermayer K. Using temporal associations to model the development of place fields in a novel environment. *European Journal of Neuroscience*, 10, Suppl. 10: 39.
- 1998 Érdi P, Kepecs Á, **Lengyel M**, Obermayer K, Szatmáry Z. Dynamics of the Hippocampus: Multiple Strategies. *International Conference on Neural Information Processing, Kitakyushu*, pp. 777-780.
- 1996 Adorján P, Barna G, Érdi P, Gröbner T, Kepecs Á, **Lengyel M**, Ventriglia F. multicompartamental modeling of hippocampal pyramidal cells and interneurons with the GENESIS software tool. *Neurobiology*, 4: 247-249.

### **Book chapter**

- 2003 Érdi P, **Lengyel M**. Matematikai modellek az idegrendszer-kutatásban (Mathematical models in neuroscience, in Hungarian), In: *Kognitív idegtudomány (Cognitive Neuroscience, in Hungarian*, eds. Pléh Cs, Kovács Gy, Gulyás B), Osiris: Budapest, pp. 126-148.