

FURTHER READING

Computational Psychiatry



- Wang, X.-J. & Krystal, J. H. Computational Psychiatry. *Neuron* **84**, 638–654 (2014).
- Read Montague, P., Dolan, R. J., Friston, K. J. & Dayan, P. Computational psychiatry. *Trends Cogn. Sci.* **16**, 72–80 (2012).
- Paulus, M. P., Huys, Q. J. M. & Maia, T. V. A Roadmap for the Development of Applied Computational Psychiatry. *Biol. Psychiatry Cogn. Neurosci. Neuroimaging* **1**, 386–392 (2016).
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- Huys, Q. J. M., Maia, T. V & Frank, M. J. Computational psychiatry as a bridge between neuroscience and clinical applications. 1–21 (2016). doi:10.1038/nn.4238
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- Friston, K. J., Stephan, K. E., Montague, R. & Dolan, R. J. Computational psychiatry: The brain as a phantastic organ. *The Lancet Psychiatry* **1**, 148–158 (2014).
- Stephan, K. E. & Mathys, C. Computational approaches to psychiatry. *Curr. Opin. Neurobiol.* **25**, 85–92 (2014).
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- Adams, R. A., Stephan, K. E., Brown, H., Frith, C. D. & Friston, K. J. The computational anatomy of psychosis. *Front. psychiatry* (2013). doi:doi: 10.3389/fpsyt.2013.00047
- Huys, Q. J., Maia, T. V & Paulus, M. P. Computational Psychiatry: From Mechanistic Insights to the Development of New Treatments. **1**, 382–385 (2016).
- Stephan, K. E., Iglesias, S., Heinzle, J. & Diaconescu, A. O. Translational Perspectives for Computational Neuroimaging. *Neuron* **87**, 716–732 (2015).
- Schwartenbeck P. & Friston K., Computational phenotyping in psychiatry: a worked example *eNeuro* DOI: 10.1523/ENEURO.0049-16.2016

FURTHER READING

Computational Models

Variational Bayes

Chapter 1 and 2

<http://www.cse.buffalo.edu/faculty/mbeal/thesis/>

Bayesian Model Selection & Averaging

Bayesian model selection for group studies

Stephan KE, Penny WD, Daunizeau J, Moran RJ, Friston KJ

Neuroimage (2009) 46(4): 1004-1017

<http://www.sciencedirect.com/science/article/pii/S1053811909002638>

Markov Chain Monte Carlo

A quick introduction to Markov chains and Markov chain Monte Carlo

Waagepetersen R

http://people.math.aau.dk/~rw/Papers/mcmc_intro.pdf

Chapter on *sampling methods* in the book "pattern recognition and machine learning" Bishop

Hierarchical Gaussian Filter

Uncertainty in perception and the Hierarchical Gaussian Filter

Mathys CD, Lomakina, EI, Daunizeau J, Iglesias S, Brodersen KH, Friston, KJ, & Stephan KE

Frontiers in Human Neuroscience (2014) 8:825

<http://doi.org/10.3389/fnhum.2014.00825>

Markov Decision Models

Planning and acting in partially observable stochastic domains

Kaelbling LP, Littman ML & Cassandra AR

Artificial Intelligence (1998),101(1-2): 99–134

<https://www.cis.upenn.edu/~mkearns/papers/barbados/klc-pomdp.pdf>

Dynamic Causal Modeling for fMRI

Understanding DCM: Ten simple rules for the clinician

Kahan J, Foltynie T

Neuroimage (2013) 83: 542-549

<http://www.sciencedirect.com/science/article/pii/S105381191300760X>

Analyzing effective connectivity with functional magnetic resonance imaging.

Stephan KE and Friston KJ, WIREs Cognitive Science (2010), 1:446-459,

http://www.fil.ion.ucl.ac.uk/spm/doc/papers/Stephan_WIREsCognSci_1_446_2010.pdf

Dynamic Causal Modeling for EEG

Losing Control Under Ketamine: Suppressed Cortico-Hippocampal Drive Following Acute Ketamine in Rats, Moran RJ, Jones MW, Blockeel AJ, Adams RA, Stephan KE & Friston KJ

Neuropsychopharmacology (2015) 40: 268–277

<http://www.nature.com/npp/journal/v40/n2/abs/npp2014184a.html>

FURTHER READING

Computational Models

Bayesian Models for Perception

A Bayesian perspective on Magnitude Estimation.

Petzschner FH, Glasauer S, Stephan KE

Trends in Cognitive Sciences (2015). 19(5):285–293

Perception as Bayesian Inference, Knill CD & Richards W, 2008

Predictive Coding & Active Inference

Computational psychiatry: the brain as a phantastic organ

Friston KJ, Stephan KE, Montague R, Dolan RJ

Lancet Psychiatry (2014) 1:148–158

Optimal inference with suboptimal models: Addiction & active Bayesian inference

Schwartenbeck P, FitzGerald THB, Mathys C, Dolan R, Wurst F, Kronbichler M, Friston K

Medical Hypotheses (2015) 84 :109–117

Reinforcement Learning

Decision-theoretic psychiatry

Huys QJM, Guitart-Masip M, Dolan RJ and Dayan P, Clin Psychol Sci

(2015) 3(3):400-421

Sutton & Barto, Reinforcement learning, MIT Press, 1998

Machine Learning

From estimating activation locality to predicting disorder: A review of pattern recognition for neuroimaging- based psychiatric diagnostics. Wolfers T, Buitelaar JK, Beckmann CF, Franke B, Marquand AF, Neuroscience & Biobehavioral Reviews (2015) 57: 328-349

Cross-validation failure: Small sample sizes lead to large error bars. GaëlVaroquaux, NeuroImage (2017) in press

Addiction

The role of learning-related dopamine signals in addiction vulnerability

Huys QJM, Tobler PT, Hasler G, Flagel SB

Progress in Neurobiology (2014): 211:31-77

Schizophrenia

What We Know: Findings That Every Theory of Schizophrenia Should

MacDonald, Schulz

Schizophrenia Bulletin, 2009

Autism

Can Bayesian Theories of Autism Spectrum Disorder Help Improve Clinical Practice?

Haker H, Schneebeli M, Stephan KE

Front. Psychiatry, 2016

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Clinical Psychiatry

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Front. Psychiatry, 2016