Current PAPERS (after 2015):

Title: Computing Value from Quality and Quantity in Human Decision-Making (JNeurosci, 2019)
Authors: Archy O. de Berker, Zeb Kurth-Nelson, Robb B. Rutledge, Sven Bestmann & Raymond J. Dolan
DOI: http://www.jneurosci.org/content/39/1/163
Comments: Would you prefer three apples or two oranges? Many choices we make each day require us to weigh up the quality and quantity of different outcomes. Using fMRI, we show that option quality is selectively represented in the inferior frontal gyrus, while option quantity correlates with areas of the intraparietal sulcus that have previously been associated with numerical processing. We show that information about the two is integrated into a value signal in the anterior cingulate cortex, and the fidelity of this integration predicts choice predictability. Our results demonstrate how on-the-fly value estimates are computed from multiple attributes in human value-based decision-making.
Suggested by: T.Erdmann

Title: Feature-specific prediction errors and surprise across macaque fronto-striatal circuits (Nature Communications, 2019)
Authors: Mariann Oemisch, Stephanie Westendorff, Marzyeh Azimi, Seyed Alireza Hassani, Salva Ardid, Paul Tiesinga & Thilo Womelsdorf
DOI: https://www.nature.com/articles/s41467-018-08184-9
Comments: To adjust expectations efficiently, prediction errors need to be associated with the precise features that gave rise to the unexpected outcome, but this credit assignment may be problematic if stimuli differ on multiple dimensions and it is ambiguous which feature dimension caused the outcome. The authors here propose a possible solution.
Suggested by: T.Erdmann

Title: Magnetoencephalography decoding reveals structural differences within integrative decision processes (Nature Human Behavior, 2018)
Authors: Eran Eldar, Gyung Jin Bae, Zeb Kurth-Nelson, Peter Dayan & Raymond J. Dolan
DOI: https://www.nature.com/articles/s41562-018-0423-3
Comments: To uncover the fast neural dynamics that support information integration the authors decoded magnetoencephalographic signals that were recorded as human subjects performed a complex decision task.
Suggested by: T.Erdmann

Title: The effect of attention and working memory on the estimation of elapsed time (*Scientific Reports*, 2018)
Authors: Ignacio Polti, Benoît Martin & Virginie van Wassenhove
DOI: https://www.nature.com/articles/s41598-018-25119-y
Comments: Paying attention to time lengthened perceived duration in the range of seconds to minutes, whereas diverting attention away from time shortened perceived duration.
Suggested by: F. Protopapa

Title: Pattern component modeling: A flexible approach for understanding the representational structure of brain activity patterns (NeuroImage, 2018)
Authors: JörnDiedrichsen, AtsushiYokoi & Spencer A.Arbuckle
DOI: https://doi.org/10.1016/j.neuroimage.2017.08.051

Comments: PCM is a Bayesian approach for testing encoding or RSA (representational) models and is more powerful than competing approaches in comparing models. Key advantage of PCM is that flexible models can be easily estimated and compared.
Suggested by: F. Protopapa

Title: The hippocampal engram maps experience but not place (Science, 2018)
Authors: Kazumasa Z. Tanaka,Hongshen He, Anupratap Tomar, Kazue Niisato, Arthur J. Y. Huang & Thomas J. McHugh
DOI: http://science.sciencemag.org/content/361/6400/392
Comments: The link between contextual memory representations and locations or routes represented by hippocampal place cells during exploration remains unknown. Tanaka *et al.* examined spatial firing properties of neurons in hippocampal area CA1 on the basis of whether they had recently expressed the immediate-early activity-induced gene *c-Fos* in response to a novel context. The c-Fos–positive neurons displayed a more on-off firing pattern than the c-Fos–negative cells during context discrimination. In a contextual recognition paradigm, these results support the index theory of hippocampal function over a cognitive mapping theory.
Suggested by:

Title: The hippocampal engram maps experience but not place (Science, 2018)
Authors: Kazumasa Z. Tanaka et al.
DOI: 10.1126/science.aat5397
Comments: The link between contextual memory representations and locations or routes represented by hippocampal place cells during exploration remains unknown. Tanaka *et al.* examined spatial firing properties of neurons in hippocampal area CA1 on the basis of whether they had recently expressed the immediate-early activity-induced gene *c-Fos* in response to a novel context. The c-Fos–positive neurons displayed a more on-off firing pattern than the c-Fos–negative cells during context discrimination. In a contextual recognition paradigm, these results support the index theory of hippocampal function over a cognitive mapping theory.
Suggested by: M. Diamond

Title: Altered intrinsic and extrinsic connectivity in schizophrenia (Neuroimage Clin., 2018)
Authors: Yuan Zhou, Peter Zeidman, Shihao Wu, Adeel Razi, Cheng Chen, Liuqing Yang, Jilin Zou, Gaohua Wang, Huiling Wang & Karl J. Friston
DOI: http://europepmc.org/articles/PMC5726753/
Comments: Use of dynamic causal modeling (DCM) to assess the hypothesis that there is aberrant directed (effective) connectivity within and between three key large-scale brain networks (the dorsal attention network, the salience network and the default mode network) in schizophrenia during a working memory task.
Suggested by: F.Protopapa

Title: Behavioural and neural characterization of optimistic reinforcement learning (Nature Human Behavior, 2017)
Authors: Germain Lefebvre, Maël Lebreton, Florent Meyniel, Sacha Bourgeois-Gironde & Stefano Palminteri
DOI: https://www.nature.com/articles/s41562-017-0067
Comments: When forming and updating beliefs about future life outcomes, people tend to consider good news and to disregard bad news. This tendency is assumed to support the optimism bias. The

authors try to discover whether this learning bias is specific to 'high-level' abstract belief update or a particular expression of a more general 'low-level' reinforcement learning process.
Suggested by: T. Erdmann

Title: Time Order as Psychological Bias (Psychological Science, 2017)
Authors: Laetitia Grabot & Virginie van Wassenhove
DOI: https://doi.org/10.1177/0956797616689369
Comments: Incorrectly perceiving the chronology of events can fundamentally alter people's understanding of the causal structure of the world.
Suggested by: F.Protopapa

Title: Optimal Degrees of Synaptic Connectivity (Cell, 2017)
Authors: A. Litwin-Kumar, K. Decker Harris, R. Axel, H. Sompolinsky & L.F. Abbott
DOI: https://doi.org/10.1016/j.neuron.2017.01.030
Comments: (1) Sparse synaptic wiring can optimize a neural representation for associative learning, (2) Maximizing dimension predicts the degree of connectivity for cerebellum-like circuits, (3) Supervised plasticity of input connections is needed to exploit dense wiring, (4) Performance of a Hebbian readout neuron is formally related to dimension.
Suggested by: Arash

Title: Dopamine neurons encode performance error in singing birds (Science, 2016)
Authors: Vikram Gadagkar, Pavel A. Puzerey, Ruidong Chen, Eliza Baird-Daniel, Alexander R. Farhang & Jesse H. Goldberg
DOI: 10.1126/science.aah6837
Comments: How do birds know that a song that they hear is from a member of their own species, and how do they learn their songs in the first place?
Suggested by: Nader

Title: Collective stochastic coherence in recurrent neuronal networks (Nature Physics, 2016)
Authors: Belén Sancristóbal, Beatriz Rebollo, Pol Boada, Maria V. Sanchez-Vives & Jordi Garcia-Ojalvo
DOI: https://www.nature.com/articles/nphys3739
Comments: Study of the interplay between noise and collective dynamics of cortical neurons, starting from experimental data
Suggested by: Mattia

Title: The Now-or-Never bottleneck: A fundamental constraint on language (BBS, 2016)
Authors: Christiansen MH & Chater N
DOI: 10.1017/S0140525X1500031X
Comments: The most recent general theoretical attempt at explaining language processing. Could be total bullshit, but a must-read for languagers. Based on a quick reading, it seems good for JC because the general principles of the theory aren't specifically linguistic, so perhaps this could be of interest to non-language people too.
Suggested by: D. Crepaldi

Title: Culture shapes the evolution of cognition (PNAS, 2016)
Authors: Bill Thompson, Simon Kirby & Kenny Smith
DOI:https://doi.org/10.1073/pnas.1523631113
Comments: Recent paper by the wonderful Kenny Smith. Very general in its theoretical significance, although based on language simulations. It's all modeling, no actual data collection.
Suggested by: D. Crepaldi

Title: No relative expansion of the number of prefrontal neurons in primate and human evolution (PNAS, 2016)
Authors: Gabi M., Neves K., Masseron C., Ribierio P. F. M., Ventura-Antunes L., Torres L., Mota B., Kaas J. H. & Herculano-Houzel S.
DOI: 10.1073/pnas.1610178113
Comments: The authors claim that one thing that distinguishes the human brain from other primate brains is thus not the relative size of its prefrontal cortex but its absolute number of neurons.
Suggested by: Alessandro

Title: Neural pattern change during encoding of a narrative predicts retrospective duration estimates (eLIfe 2016)
Authors: Olga Lositsky, Janice Chen, Daniel Toker, Christopher J Honey, Michael Shvartsman, Jordan L Poppenk, Uri Hasson & Kenneth A Norman
DOI: https://elifesciences.org/articles/16070
Comments: What mechanisms support our ability to estimate durations on the order of minutes?
Suggested by: F.Protopapa

Title: Intersubject variability and induced gamma in the visual cortex: DCM with empirical Bayes and neural fields (Human Brain Mapping, 2016)
Authors: Dimitris A. Pinotsis, Gavin Perry, Vladimir Litvak, Krish D. Singh & Karl J. Friston
DOI: https://onlinelibrary.wiley.com/doi/full/10.1002/hbm.23331
Comments: This article describes the first application of a generic (empirical) Bayesian analysis of between-subject effects in the dynamic causal modeling (DCM) of electrophysiological (MEG) data.
Suggested by: F.Protopapa

Title: Culture shapes the evolution of cognition (PNAS, 2016)
Authors: Bill Thompson, Simon Kirby & Kenny Smith
DOI: https://www.pnas.org/content/113/16/4530
Comments: A central debate in cognitive science concerns the nativist hypothesis: the proposal that universal human behaviors are underpinned by strong, domain-specific, innate constraints on cognition. We use a general model of the processes that shape human behavior—learning, culture, and biological evolution—to test the evolutionary plausibility of this hypothesis. A series of analyses shows that culture radically alters the relationship between natural selection and cognition. Culture facilitates rapid biological adaptation yet rules out nativism: Behavioral universals arise that are underpinned by weak biases rather than strong innate constraints.
Suggested by: F.Protopapa

Title: A number-form area in the blind (Nat Comm, 2015)

Authors: Sami Abboud et al.
DOI: https://www.nature.com/articles/ncomms7026
Comments: This papers claims the existence of a number-form area in the ventral stream of blind people, thus reinterpreting the nature of the VS.
Suggested by: D. Crepaldi

Title: Decoding stimulus features in primate somatosensory cortex during perceptual categorization (PNAS, 2015)
Authors: Manuel Alvarez, Antonio Zainos & Ranulfo Romo
DOI: https://doi.org/10.1073/pnas.1504723112
Comments: A key step in studying perceptual categorization mechanisms is to understand how neurons from early sensory cortices encode the relevant features categorized of a sensory stimulus and how they relate to it. We studied the encoding capacities of primary somatosensory cortex (S1) neurons while trained monkeys categorized only one sensory feature of a vibrotactile stimulus: frequency, amplitude, or duration. The results suggest a hierarchical encoding scheme in S1: from neurons that encode all sensory features of the vibrotactile stimulus to neurons that encode only one sensory feature. Sensory feature encoding in S1 could serve downstream networks for constructing perceptual categorization.
Suggested by: F.Protopapa

Title: A number-form area in the blind (*Nature Communications*, 2015)
Authors: Sami Abboud, Shachar Maidenbaum, Stanislas Dehaene & Amir Amedi
DOI: https://doi.org/10.1073/pnas.1504723112
Comments: The ventral ‘visual’ stream can emerge independently of sensory modality and visual experience, under the influence of distinct connectivity patterns.
Suggested by: F.Protopapa