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Journal Publications

Hadzic A, Hwang GM, Zhang K, Schultz KM, and **Monaco JD**. (*In preparation*). Bayesian optimization of distributed neurodynamical controller models for spatial navigation.

Buckley E, **Monaco JD**, Schultz KM, Chalmers R, Hadzic A, Zhang K, Hwang GM, and Carr MD. (*Under review*). An interdisciplinary approach to high school curriculum development: Swarming Powered by Neuroscience. *Frontiers in Education*.

Monaco JD, Rajan K, and Hwang GM. (*In revision*). A brain basis of dynamical intelligence for AI and computational neuroscience. *Nature Machine Intelligence*.

Monaco JD, Hwang GM, Schultz KM, and Zhang K. (2020). Cognitive swarming in complex environments with attractor dynamics and oscillatory computing. *Biological Cybernetics*, 114, 269–284. doi: 10.1007/s00422-020-00823-z

Wang CH, **Monaco JD**, and Knierim JJ. (2020). Hippocampal place cells encode local surface texture boundaries. *Current Biology*, 30, 1–13. doi: 10.1016/j.cub.2020.01.083

Monaco JD, De Guzman RM, Blair HT, and Zhang K. (2019). Spatial synchronization codes from coupled rate-phase neurons. *PLOS Computational Biology*, 15(1), e1006741. doi: 10.1371/journal.pcbi.1006741

Tabuchi M, **Monaco JD**, Duan G, Bell BJ, Liu S, Zhang K, and Wu MN. (2018). Clock-generated temporal codes determine synaptic plasticity to control sleep. *Cell*, 175(5), 1213–27. doi: 10.1016/j.cell.2018.09.016

Monaco JD, Rao G, Roth ED, and Knierim JJ. (2014). Attentive scanning behavior drives one-trial potentiation of hippocampal place fields. *Nature Neuroscience*, 17(5), 725–731. doi: 10.1038/nn.3687

Monaco JD, Knierim JJ, and Zhang K. (2011). Sensory feedback, error correction, and remapping in a multiple oscillator model of place cell activity. *Frontiers in Computational Neuroscience*, 5:39. doi: 10.3389/fncom.2011.00039

Monaco JD and Abbott LF. (2011). Modular realignment of entorhinal grid cell activity as a basis for hippocampal remapping. *Journal of Neuroscience*, 31(25), 9414–25. doi: 10.1523/jneurosci.1433-11.2011

Muzzio IA, Levita L, Kulkarni J, **Monaco J**, Kentros CG, Stead M, Abbott LF, and Kandel ER. (2009). Attention enhances the retrieval and stability of visuospatial and olfactory representations in the dorsal hippocampus. *PLOS Biology*, 7(6), e1000140. doi: 10.1371/journal.pbio.1000140

Monaco JD, Abbott LF, and Kahana MJ. (2007). Lexico-semantic structure and the recognition word-frequency effect. *Learning & Memory*, 14(3), 204–213. doi: 10.1101/lm.363207

Conference Papers

Hwang GM, Schultz KM, **Monaco JD**, and Zhang K. (2021). Neuro-Inspired Dynamic Replanning in Swarms—Theoretical Neuroscience Extends Swarming in Complex Environments. *Johns Hopkins APL Technical Digest*, 35, 443–447.

Monaco JD, Hwang GM, Schultz KM, and Zhang K. (2019). Cognitive swarming: An approach from the theoretical neuroscience of hippocampal function. *Proceedings of SPIE (International society for optics and photonics) Defense & Commercial Sensing*. Micro- and Nanotechnology Sensors, Systems, and Applications XI, 109822D, 1–10. doi: 10.1117/12.2518966

Monaco JD and Levy WB. (2003). T-maze training of a recurrent CA3 model reveals the necessity of novelty-based modulation of LTP in hippocampal region CA3. *Proceedings of International Joint Conference on Neural Networks*, 1655–1660. doi: 10.1109/IJCNN.2003.1223655

Preprints

Buckley E, **Monaco JD**, Schultz KM, Chalmers R, Hadzic A, Zhang K, Hwang GM, and Carr MD. (2021). An interdisciplinary approach to high school curriculum development: Swarming Powered by Neuroscience. *ArXiv Preprint*. arxiv:2109.05545

Monaco JD, Rajan K, and Hwang GM. (2021). A brain basis of dynamical intelligence for AI and computational neuroscience. *ArXiv Preprint*. arxiv:2105.07284

Levenstein D, Alvarez VA, Amarasingham A, Azab H, Gerkin RC, Hasenstaub A, Iyer R, Jolivet RB, Marzen S, **Monaco JD**, Prinz AA, Quraishi S, Santamaria F, Shivkumar S, Singh MF, Stockton DB, Traub R, Rotstein HG, Nadim F, and Redish AD. (2020). On the role of theory and modeling in neuroscience. *ArXiv Preprint*. arxiv:2003.13825

Monaco JD, Hwang GM, Schultz KM, and Zhang K. (2019). Cognitive swarming in complex environments with attractor dynamics and oscillatory computing. *ArXiv Preprint*. arxiv:1909.06711

Wang CH, **Monaco JD**, and Knierim JJ. (2019). Hippocampal place cells encode local surface texture boundaries. *bioRxiv*. doi: 10.1101/764282

Monaco JD, Blair HT, and Zhang K. (2017). Spatial theta cells in competitive burst synchronization networks: Reference frames from phase codes. *bioRxiv*. doi: 10.1101/211458

Thesis

Monaco JD. (2009). Models and mechanisms for integrating cortical feature spaces. Doctoral Dissertation, Columbia University, New York. *ProQuest Publication No. AAT 3393609*