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## Education

**Ph.D. in Applied Mathematics** 2012-2018
*Brown University, Advisor: Stuart Geman*
**B.S. in Statistics and Probability** 2008-2012
*Peking University*
**B.A. in Economics** 2009-2012
*Peking University*

## Work Experiences

**Staff Research Scientist, Google DeepMind** 2026.5-present
**Senior Research Scientist, Google DeepMind** 2024.5-2026.5
**Research Scientist, Google DeepMind** 2022.5-2024.4
**Staff Research Scientist, Vicarious AI** 2021.10-2022.5
**Researcher, Vicarious AI** 2019.7-2021.9
**Postdoctoral Associate, Applied Math, Brown University** 2018.9-2019.6
**Applied Scientist Intern, Amazon Lab126** 2017.5-2018.8
**Consulting for Quantitative Finance Firms**

- *Consultant, Qsemble Capital Management* *2018.9-2019.6*
- *Consultant, Engineers Gate* *2015.8*

## Publications

- Kelsey Allen, Carl Doersch, **Guangyao Zhou**, Mohammed Suhail, Danny Driess, Ignacio Rocco, Yulia Rubanova, Thomas Kipf, Mehdi SM Sajjadi, Kevin Murphy, et al. Direct motion models for assessing generated videos. In *International Conference on Machine Learning*. PMLR, 2025

- Valentin De Bortoli, Alexandre Galashov, J Swaroop Guntupalli, **Guangyao Zhou**, Kevin Murphy, Arthur Gretton, and Arnaud Doucet. Distributional diffusion models with scoring rules. In *International Conference on Machine Learning*. PMLR, 2025

- Dileep George, Miguel Lázaro-Gredilla, Wolfgang Lehrach, Antoine Dedieu, **Guangyao Zhou**, and Joseph Marino. A detailed theory of thalamic and cortical microcircuits for predictive visual inference. *Science Advances*, 11(6):eadr6698, 2025

- **Guangyao Zhou**, Sivaramakrishnan Swaminathan, Rajkumar Vasudeva Raju, J Swaroop Guntupalli, Wolfgang Lehrach, Joseph Ortiz, Antoine Dedieu, Miguel Lazaro-Gredilla, and Kevin Patrick Murphy. Diffusion model predictive control. *Transactions on Machine Learning Research*, 2025

- **Guangyao Zhou**, Antoine Dedieu, Nishanth Kumar, Wolfgang Lehrach, Shrinu Kushagra, Dileep George, and Miguel Lázaro-Gredilla. Pgmax: Factor graphs for discrete probabilistic graphical models and loopy belief propagation in jax. *Journal of Machine Learning Research*, 25(371):1–25, 2024

- Joseph Ortiz, Antoine Dedieu, Wolfgang Lehrach, J Swaroop Guntupalli, Carter Wendelken, Ahmad Humayun, Sivaramakrishnan Swaminathan, **Guangyao Zhou**, Miguel Lázaro-Gredilla, and Kevin P Murphy. Dmc-vb: A benchmark for representation learning for control with visual distractors. *Advances in Neural Information Processing Systems*, 37:6574–6602, 2024
- Mel Vecerik, Carl Doersch, Yi Yang, Todor Davchev, Yusuf Aytar, **Guangyao Zhou**, Raia Hadsell, Lourdes Agapito, and Jon Scholz. Robotap: Tracking arbitrary points for few-shot visual imitation. In *2024 IEEE International Conference on Robotics and Automation (ICRA)*, pages 5397–5403. IEEE, 2024
- Rajkumar Vasudeva Raju, J Swaroop Guntupalli, **Guangyao Zhou**, Carter Wendelken, Miguel Lázaro-Gredilla, and Dileep George. Space is a latent sequence: A theory of the hippocampus. *Science Advances*, 10(31):eadm8470, 2024
- Antoine Dedieu, Wolfgang Lehrach, **Guangyao Zhou**, Dileep George, and Miguel Lázaro-Gredilla. Learning cognitive maps from transformer representations for efficient planning in partially observed environments. In *International Conference on Machine Learning*. PMLR, 2024
- **Guangyao Zhou***, Nishad Gothoskar*, Lirui Wang, Joshua B Tenenbaum, Dan Gutfreund, Miguel Lázaro-Gredilla, Dileep George, and Vikash K Mansinghka (* indicates equal contribution). 3D Neural Embedding Likelihood: Probabilistic Inverse Graphics for Robust 6D Pose Estimation. In *Proceedings of the IEEE/CVF International Conference on Computer Vision*, 2023
- J Swaroop Guntupalli, Rajkumar Vasudeva Raju, Shrinu Kushagra, Carter Wendelken, Danny Sawyer, Ishan Deshpande, **Guangyao Zhou**, Miguel Lázaro-Gredilla, and Dileep George. Graph schemas as abstractions for transfer learning, inference, and planning. *arXiv preprint arXiv:2302.07350*, 2023
- Antoine Dedieu, **Guangyao Zhou**, Dileep George, and Miguel Lázaro-Gredilla. Learning noisy or bayesian networks with max-product belief propagation. In *International Conference on Machine Learning*, pages 7426–7448. PMLR, 2023
- **Guangyao Zhou**. Metropolis Augmented Hamiltonian Monte Carlo. In *Symposium on Advances in Approximate Bayesian Inference*, pages 1–10. PMLR, 2022
- **Guangyao Zhou**, Wolfgang Lehrach, Antoine Dedieu, Miguel Lázaro-Gredilla, and Dileep George. Graphical Models with Attention for Context-Specific Independence and an Application to Perceptual Grouping. *arXiv preprint arXiv:2112.03371*, 2021
- Miguel Lázaro-Gredilla, Wolfgang Lehrach, Nishad Gothoskar, **Guangyao Zhou**, Antoine Dedieu, and Dileep George. Query training: Learning a worse model to infer better marginals in undirected graphical models with hidden variables. *AAAI Conference on Artificial Intelligence (AAAI)*, 2021
- **Guangyao Zhou**. Mixed Hamiltonian Monte Carlo for Mixed Discrete and Continuous Variables. *Advances in Neural Information Processing Systems (NeurIPS)*, 2020
- Jackson Loper*, **Guangyao Zhou***, and Stuart Geman (* indicates equal contribution). Capacities and efficient computation of first passage probabilities. *Phys. Rev. E 102, 023304*, 2020
- **Guangyao Zhou**, Jackson Loper, and Stuart Geman. Base-pair ambiguity and the kinetics of RNA folding. *BMC Bioinformatics*, 20(1):666, December 2019
- **Guangyao Zhou**, Stuart Geman, and Joachim M Buhmann. Sparse feature selection by information theory. In *2014 IEEE International Symposium on Information Theory*, pages 926–930, June 2014
- **Guangyao Zhou**, Zhiwu Lu, and Yuxin Peng. L1-graph construction using structured sparsity. *Neurocomputing*, 120:441–452, November 2013

## Services

Reviewer for ICML, NeurIPS, ICLR, AISTATS, AABI.