Personal Info

email: mikail@mit.edu; Date of Birth: 12/20/1995
Address: 76A Pleasant Street, Cambridge, MA 02139

Education

2018-ongoing	PhD in Physics (Currently in year 4), Massachusetts Institute of Technology.
March '19 - present	MathWorks Science Fellow, Graduate research in theoretical and computational systems neuroscience Primary Advisor: Ila Fiete, Secondary Advisor: Mehran Kardar. Studying self organized module formation in neural circuits with mammalian grid cells as a paradigmatic example. Secondary projects include modelling compositional drawings and arm movements with RNNs, bottom-up growth models of visual cortex retinotopic maps.
2014-2018	Bachelor's degree from the Indian Institute of Technology (IIT), Bombay in Engineering physics with a minor in **Mathematics** and **Major** with **honours** in **Physics**; with a GPA of 9.5 (out of 10).
High School	The Bombay Scottish School, Mahim, Mumbai, India

Conference Abstracts

- **Khona, Mikail**, Chandra, Sarthak, Acosta, Francisco, Fiete, Ila (2021) The emergence of discrete grid cell modules from smooth gradients in the brain. Cosyne Abstracts 2021.
- **Khona, Mikail**, Xu, Qianli and Fiete, Ila (2020). A model of oscillatory gating of information flow between neural circuits as a function of local recurrence. Cosyne Abstracts 2020, Denver, CO.

Publications

- (2021) Schaeffer, Rylan*, Bordelon Blake*, **Khona, Mikail***, Pan, Weiwei, Fiete, Ila
  Efficient Online Inference for Nonparametric Latent Variable Time Series. Conference on Uncertainity in Artificial Intelligence(UAI), 2021.
- Schaeffer, Rylan, **Khona, Mikail**, Meshulam, Leenoy, Fiete, Ila (2020) Reverse-engineering recurrent neural network solutions to a hierarchical inference task for mice. Proceedings of NeurIPS, 2020.
- **Mikail Khona**, Ila R. Fiete, Nature reviews neuroscience.
  Attractor and Integrator Networks in Neuroscience. (invited review, in revision, preprint available upon request)
- Spontaneous emergence of topologically robust grid cell modules: A multiscale instability theory.
  Khona, Mikail*, Chandra, Sarthak*, Fiete, Ila (2021). Submitted, preprint available at *this biorxiv link.*
- A. Pérez-Escudero, **Mikail Khona**, Jeff Gore (in prep)
  A simple rule governs the outcome of foraging in *Caenorhabditis elegans.*

Technical Skills

- Scientific computing with Python (NumPy, SciPy) and MATLAB
- Deep learning with Python: Pytorch
- Scientific illustration with Adobe Illustrator