

# Sugandha Sharma

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## EDUCATION

- PhD in Computational Neuroscience**, Massachusetts Institute of Technology Cambridge, MA | March, 2024
- Specialization: **Artificial Intelligence and Machine Learning**
  - Advisors: Professor Josh Tenenbaum and Professor Ila Fiete
- MASc. in Sytems Design Engineering**, University of Waterloo Waterloo, ON | May, 2018
- Advisor: Professor Chris Eliasmith
- BASc. in Electrical Engineering**, University of Waterloo Waterloo, ON | May, 2015
- Dean's Honours List.

## WORK EXPERIENCE

- Nvidia** | Generative AI Santa Clara, CA | April 2023 – Present
- LLM evaluation, Multimodal foundation models, AI chatbots, Graph/Dynamic RAG applications
  - LLM customization using DAPT (Domain Adaptive Pre-training) and SFT (Supervised Fine-Tuning)
- Microsoft Research** | Research Scientist New York City, NY | May 2023 – March 2024
- Paper: Toward Human-AI Alignment in Large-Scale Multi-Player Games
  - Built **GPT based** game playing AI agents for a multi-player Xbox game: Bleeding Edge
  - Studied human-AI alignment through **interpretable** analysis of AI & human behavior using unsupervised manifold learning (UMAP) on a large-scale human game-play dataset  $\approx$  100K games.
- Stanford University** | Visiting Researcher Stanford, CA | May 2017 – Aug 2017
- AMD** | Software Developer Markham, ON | Sept 2014 – Dec 2014
- Nvidia** | Systems Engineer Santa Clara, ON | Jan–May 2014; April–Aug 2013
- Blackberry** | Software Engineer Waterloo, ON | Sept 2012 – Dec 2012

## SELECTED PUBLICATIONS

- Map Induction: Compositional Spatial Submap Learning For Efficient Exploration In Novel Environments** ICLR 2022  
S Sharma, A Curtis, M Kryven, J Tenenbaum, I Fiete
- Content Addressable Memory Without Catastrophic Forgetting By Heteroassociation With A Fixed Scaffold** ICML 2022  
S Sharma, S Chandra, I Fiete
- High-capacity Flexible Hippocampal Associative And Episodic Memory Enabled By Prestructured Spatial Representations** under review at Nature  
\*S Chandra, \*S Sharma, R Chaudhury, I Fiete (\*co-first, alphabetical)
- Efficient Inference In Structured Spaces** Cell 2020  
Sanders, M Wilson, M Klukas, S Sharma, I Fiete
- Toward Human-AI Alignment In Large-Scale Multi-Player Games** arXiv 2024  
S Sharma, G Davidson, K Khetarpal, A Kanervisto, U Arora, K Hofmann, I Momennejad
- Fragmented Spatial Maps From Surprisal: State Abstraction And Efficient Planning** bioRxiv 2022  
M Klukas, S Sharma, Y Du, T Lozano-Perez T, L Kaelbling, I Fiete
- How Is Scene Recognition In A Convolutional Network Related To Human Visual System** ICANN 2016  
S Sharma, B Tripp
- Large-scale Cognitive Model Design Using The Nengo Neural Simulator** Elsevier BICA 2016  
S Sharma, S Aubin, C Eliasmith

## SKILLS

- **Hands on experience:** GPT, LLMs, Generative AI, RL, Planning, SLAM, Navigation, Memory retrieval
- **Packages:** Pytorch, Tensorflow, SciPy, Scikit-learn, Numpy