

Ritik Raina

<http://rainarit.github.io>

<https://www.linkedin.com/in/ritikraina/>

Email : ritik.raina@stonybrook.edu

Mobile : +1-818-629-7022

EDUCATION

- **Stony Brook University** Stony Brook, NY
Ph.D. in Cognitive Science 08/23 – 06/27 (expected)
 - **Research directions:** Developing brain-inspired computer vision models, bridging human and machine visual perception via top-down modulations.
- **University of California, San Diego** La Jolla, CA
B.S. in Cognitive Science 09/2018 – 06/2022

WORK EXPERIENCE

- **EyeCog Lab - Stony Brook University**, Graduate Student Researcher 08/2023 - Present
Advisor: Dr. Gregory Zelinsky
 - Currently working on inventing novel image synthesis techniques using eye movements and foveated inputs to predict and generate high-resolution images based on language cues.
- **de Sa Lab - UC San Diego**, Pre-Doctoral Researcher 02/2021 - 06/2023
Advisor: Dr. Virginia R. de Sa
 - Led a project on the exploration of racial biases across facial expression analysis models via artificially-generated faces with varying manipulations to skin color, facial morphology, and facial muscle activation.
 - Worked on developing bio-inspired convolutional networks, "DivNormEI", and their integration into modern deep neural networks. This research is supported by the Sony Research Award Program.
 - Papers summarizing our research accepted at NeurIPS, VSS, and COSYNE.
- **Intel Corporation**, Researcher 01/2022 - 06/2023
Mentors: Dr. Jamel Tayeb, Dr. Farnaz Abdollahi, Dr. Bijan Arbab, Dr. Virginia R. de Sa
 - Led a project to develop a real-time Bi-LSTM based PC anomaly detection system for generating long-term forecasts of PC hardware/software metrics. Soon to be run in Intel hardware.
 - Incorporated facial expression analysis in order to test whether negative facial emotions were influenced by PC anomalies detected.

SELECT PUBLICATIONS

- **Adaptive recurrent vision performs zero-shot computation scaling to unseen difficulty levels** [Paper]
Veerabadran, V., Ravishankar, S., Tang, Y., **Raina, R.**, & de Sa, V. R.
Neural Information Processing Systems (NeurIPS) 2023
- **Cortically motivated recurrence enables visual task extrapolation** [Poster]
Veerabadran, V., Ravishankar, S., Tang, Y., **Raina, R.**, & de Sa, V. R.
Vision Sciences Society (VSS) 2023, Computational and Systems Neuroscience (COSYNE) 2023
- **Analyzing Biases in AU Activation Estimation Toward Fairer Facial Expression Recognition** [Paper]
Monares, M., Tang, Y., **Raina, R.**, & de Sa, V.R.
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2023
- **Exploring Biases in Facial Expression Analysis using Synthetic Faces** [Paper]
Raina, R., Monares, M., Xu, M., Fabi, S., Xu, X., Li, L., Sumerfield, W., Gan, J., & de Sa, V.R.
SyntheticData4ML Workshop (NeurIPS) 2022

- **Bio-inspired divisive normalization improves object recognition performance in ANNs** [Poster]
Veerabadran, V., **Raina, R.**, & de Sa, V. R.
Vision Sciences Society (VSS) 2022
- **Bio-inspired learnable divisive normalization for ANNs** [Paper]
Veerabadran, V., **Raina, R.**, & de Sa, V. R.
SVRHM Workshop (NeurIPS) 2021

HONORS & AWARDS

- Financial grants awarded for supporting my research:
IBM-UCSD Research Collaboration (07/2020 - 04/2021)
UCSD-HDSI & Intel DCA Collaboration (01/2022 - 06/2023)

SKILLS

Languages Python (proficient), C++ (moderate), Julia, MATLAB, R, Bash, \LaTeX
Frameworks PyTorch (proficient), TensorFlow / Keras (proficient), OpenAI Gym, CUDA, OpenCV, git

MENTORING

- **Stony Brook University**, Graduate Teaching Assistant
Memory, *Prof. Suparna Rajaram* **Fall 2023**

PROFESSIONAL SERVICE

- Reviewer for NeurIPS workshops (2022)