SHREYA SAHA

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EDUCATION

University of California, San Diego ***2023-Present***
PhD in Electrical and Computer Engineering

University of California, San Diego ***2021-2023***
Master of Science in Computer Science ***CGPA – 3.870***

National Institute of Technology, Durgapur, India ***2015-2019***
Bachelor of Technology in Computer Science and Engineering ***CGPA – 9.14/10***

PUBLICATIONS

- ***Shreya Saha****, Shurui Li, Greta Tuckute, Yuanning Li, Ru-Yuan Zhang, Leila Wehbe, Evelina Federenko, Meenakshi Khosla, "Modeling the language cortex with form-independent and enriched representations of sentence meaning reveals remarkable semantic abstractness", In Review at the 2026 International Conference on Learning Representations (ICLR)*
- *Jialin Wu**, Shreya Saha****, Yiqing Bo, Meenakshi Khosla, "A Data-driven Typology of Vision Models from Integrated Representational Metrics", In Review at the 2026 International Conference on Learning Representations (ICLR)*
- *Jialin Wu**, Shreya Saha****, Yiqing Bo, Meenakshi Khosla, "Measuring the Measures: Discriminative Capacity of Representational Similarity Metrics Across Model Families", Under Review at Neurips 2025 Workshop Unireps*
- ***Shreya Saha****, Ishaan Chadha, Meenakshi Khosla, "Modeling the Human Visual System: Comparative Insights from Response-Optimized and Task-Optimized Vision Models, Language Models, and different Readout Mechanisms", Accepted at 2025 8th Annual Conference on Cognitive Computational Neuroscience (CCN)*
- ***Shreya Saha****, Sainan Liu, Shan Lin, Jingpei Lu, Michael Yip, "BASED: Bundle-Adjusting Surgical Endoscopic Dynamic Video Reconstruction using Neural Radiance Fields", Accepted at 2025 IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*
- *Mahabub Hasan Mahalat, **Shreya Saha**, Anindan Mondal and Bibhash Sen,"A PUF based Light Weight Protocol for Secure WiFi Authentication of IoT devices", 2018 Eighth International Symposium on Embedded Computing and System Design (ISED)*
- *Shachindra, Sagar Ganiga, **Shreya Saha**, Anish Mishra, Meit Maheshwari and Gaurv Kumar, "Secure and Decentralized Live Streaming using Blockchain and IPFS -Workshop", 2019 ThirdWorkshop on Blockchain Technologies and its Applications*

ONGOING MANUSCRIPTS

Universal Embedding Spaces across Large Vision and Language Models

- Introduced a universal embedding framework that brings together representations from different networks into a single common space using shape analysis and optimal-transport theory
- Designing a universal scoring mechanism to rank inputs of varying modality based on their ability to distinguish representations of models, including those with similar end-task performance.
- Leverage this framework as a pruning method to identify inputs most consistently or inconsistently represented across models
- *Exploring if the proposed scoring mechanism can outperform state-of-the-art image–text similarity metrics such as CLIP*

RESEARCH PROJECTS

Computational modeling of the Human Language Cortex ***2025***

- Investigating the potential of visual inputs to model language cortex activity, and understand its implications
- Investigating the role of commonsense context and multimodal representations beyond the original stimulus in language modeling.
- Investigating the functional specialization of distinct language cortex regions

Computational Modeling of the Human Visual System ***2024***

- Analyzed diverse artificial neural network architectures to identify those best modeling the human visual cortex using multimodal vision and language inputs.
- Identified three distinct cortical regions specializing in (a) perceptual features, (b) localized visual semantics aligned with language, and (c) global semantic interpretations linked to linguistic context.
- Developed a novel readout method with Spatial Transformers, achieving 3–23% accuracy gains over prior state-of-the-art methods.

Bundle Adjusting Neural Radiance Fields ***2023***

- BASED - Created a NeRF based framework to reconstruct dynamic and deformable surgical scenes captured at unknown camera poses that is generic, unrestricted and validated on several surgical scene reconstruction datasets
- BAA-NGP - Used Instant Neural Graphics Primitives to speed up existing techniques to bundle adjust camera poses while simultaneously reconstructing the scene, and achieved 10-20x speedup, while maintaining comparable performance with existing baselines.

ACADEMIC AWARDS AND FELLOWSHIPS

- Kavli Institute for Brain and Mind Innovative Research grant Award **2025-2026**
- Electrical and Computer Engineering Department Fellowship - UC San Diego **2023-2024**

INTERNSHIPS AND PROFESSIONAL EXPERIENCE

Meta (Facebook)

Software Engineering Intern at Facebook Marketplace Intelligence ***June 2022 - September 2022***

- Part of the Facebook Marketplace Product Intelligence team
- Worked on investigating the causes for low quality data that leads to poor performance by ML models
- Created additional Artificial data to train the marketplace ML models

J P Morgan and Chase, Bengaluru, India

Software Developer I ***July 2019-December 2020***

Software Developer II ***January 2021- August 2021***

- Designed a CQRS framework that helped automate user requests without manual intervention using the axon framework
- Developed various microservices for the above framework and helped other teams onboard to this framework

Software Engineering Intern ***May 2018 -July 2018***

- Built an UI framework on top of Flower (a web based tool for monitoring Celery events) that visualized the various stages of a user task.

Revotic Engineering (Startup)

Software Engineering Intern ***October 2018-January 2019***

- Built a python REST API on top of ipfs.io which allows the user to perform various InterPlanetary File System (ipfs) functionalities
- Built a desktop application that allows the client to perform ipfs functions locally

Indian Institute of Technology, Bombay

Software Engineering Intern ***May 2017-July 2017***

- Built a platform (XBlock) to help teachers conduct online examinations, automatically grade the student's work and graphically display the student's performance.