Srijita Karmakar

Dept. of Psychological and Brain Sciences, UC Santa Barbara

I am currently a third-year PhD student in the **Vision and Image Understanding Lab**, working under the supervision of **Prof. Miguel Eckstein**, at the Dept. of Psychological and Brain Sciences, UCSB.

Education

2022-present **PhD Student, Dept. of Psychological and Brain Sciences**, *University of California, Santa Barbara*.
GPA: 4.0

2017-2022 **5-year Integrated BS-MS Dual Degree Program (Major: Biological Sciences)**, *Indian Institute of Science Education and Research (IISER)*, Kolkata.
CGPA: 9.46 (out of 10)

2017 **Higher Secondary Education Examination**, *Delhi Public School*, Kolkata.
AISSCE percentage: 93.5%

2015 **Secondary Education Examination**, *Auxilium Convent School*, Kolkata.
ICSE percentage: 95.6%

Research Experience

Journal Publications

July 2024 **Research Article**, *Klein, D., Karmakar, S., Jonnalagadda, A., Abbey, C. K. and Eckstein, M. P. Greater benefits of deep learning-based computer-aided detection systems for finding small signals in 3D volumetric medical images.*
Journal of Medical Imaging 11, 4: 045501 (2024) doi: https://doi.org/10.1117/1.JMI.11.4.045501

February 2023 **Research Article**, *Karmakar, S., and Das, K. Investigating the role of visual experience with face-masks in face recognition during COVID-19 (Version 1).*
arXiv 2303.06031v1[q-bio.NC] (2023) doi: https://doi.org/10.48550/ARXIV.2303.06031 (under review)

April 2021 **Research Article**, *Dasgupta, D., Banerjee, A., Karar, R., Banerjee, D., Mitra, S., Sardar, P., Karmakar, S., Bhattacharya, A., Ghosh, S., Bhattacharjee, P., and Paul, M. Altered Food Habits? Understanding the Feeding Preference of Free-Ranging Gray Langurs Within an Urban Settlement.*
Frontiers in Psychology 12:1120 (2021) doi: https://doi.org/10.3389/fpsyg.2021.649027

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Conference Presentation

May 2024 **Vision Sciences Society 2024**, *Karmakar, S., and Eckstein, M. P. Anticipatory Orienting of Covert Attention with Dynamic Gaze-Cueing*, (Poster).
Journal of Vision 24:10 751 (2024) doi: https://doi.org/10.1167/jov.24.10.751

July 2023 **Gordon Research Conferences: Eye Movements 2023**, *Karmakar, S., and Eckstein, M.P. Effect of Peripheral Information on Gaze-Following Strategies*, (Poster).

July 2023 **Gordon Research Seminar: Eye Movements 2023**, *Karmakar, S., and Eckstein, M.P. Effect of Peripheral Information on Gaze-Following Strategies*, (Talk).

May 2022 **Vision Sciences Society 2024**, *Karmakar, S., and Das, K. Does visual experience with face masks aid face recognition during the COVID-19 pandemic?*, (Poster).
Journal of Vision 22:14 3243 (2022) doi: https://doi.org/10.1167/jov.22.14.3243

Projects and Internships

June 2023 - July 2024 **Second-Year PhD Project**, *Prof. Miguel Eckstein*, PBS, UCSB.
I am working to understand the role of peripheral information in guiding overt and covert attentional shifts in naturalistic and synthetic tasks. I am also interested in uncovering the neural correlates that pertain to and might predict gaze-following behavior under different peripheral information conditions.

Sept 2022 - June 2023 **First-Year PhD Project**, *Prof. Miguel Eckstein*, PBS, UCSB.
I am working to understand the role of peripheral information in guiding eye-movement strategies undertaken as a means to follow gaze within a naturalistic task. I am also interested in uncovering the neural correlates that pertain to and might predict gaze-following behavior under different peripheral information conditions.

Aug 2021 - June 2022 **Master's Research Project, IISER Kolkata**, *Prof. Koel Das*, DMS, IISER Kolkata.
Master's thesis work on the neural underpinnings of face perception in humans, by utilizing statistical pattern recognition and machine learning

Aug-Dec 2020 **Semester Reading Project, IISER Kolkata**, *Prof. Koel Das*, DMS, IISER Kolkata.
Reading Project on Machine Learning and its applications in the analysis of EEG data. Learned about Bayesian Decesion Theory and techniques for feature extraction such as LDA and PCA, and model evaluation using cross validation and bootstrapping to train and test classifiers

May-July 2019 **Summer Internship, University of Calcutta**, *Dr. Manabi Paul*, Dept. of Env. Sc., Science College, Kolkata.
Interned in the field of Animal Behaviour to study primate-human interaction and unique feeding behaviour displayed by a group of urban-adapted primates (Gray Langurs). The work consisted of building an ethogram based on ad-libitum study, subsequent field work and learning to analyze behaviour through data

May-July 2018 **Summer Internship, IISER Kolkata**, *Prof. Mohit Prasad*, DBS, IISER Kolkata.
Interned in the field of *Drosophila* genetics to study the effect of Homoeopathy medicines, such as Arsenicum and Gelsemium, on fruit fly development with focus on eye development in a mutant strain, and also learned techniques to dissect, stain and image *Drosphila* ovary

Research Mentorship Experience

Spring 2024 - present **Research Mentor**, *Undergraduate Honors Thesis Student*, VIU Lab, PBS, UCSB.
Supervising an undergraduate student conduct her Honors Thesis research on understanding gaze-cue perception in the presence or absence of contextual information in humans and large language models (LLMs)

Fall 2024 **Research Mentor**, *PSY99/199*, VIU Lab, PBS, UCSB.
Trained 2 undergraduate research assistants to run psychophysics experiments over multiple sessions per participant using MATLAB platform, and led coding/journal club discussion series

Summer 2024 **Research Mentor**, *PSY99/199*, VIU Lab, PBS, UCSB.
Trained 2 undergraduate research assistants to run psychophysics experiments over multiple sessions per participant using MATLAB platform, delivered an RA lecture on attention and eye-movements, and led coding/journal club discussion series

Winter 2024 **Research Mentor**, *PSY99/199*, VIU Lab, PBS, UCSB.
Trained 4 undergraduate research assistants to run psychophysics experiments over multiple sessions per participant using MATLAB platform, delivered an RA lecture on attention and eye-movements

Spring 2023 **Research Mentor**, *PSY99/199*, VIU Lab, PBS, UCSB.
Trained 4 undergraduate research assistants to run experiments and collect multi-modal data consisting of eye-tracking and EEG; teaching the basics of programming languages such as Python and MATLAB to $\sim$ 10 RAs; delivered an RA lecture on electroencephalography

Winter 2023 **Research Mentor**, *PSY99/199*, VIU Lab, PBS, UCSB.
Trained 3 undergraduate research assistants to run experiments and collect multi-modal data consisting of eye-tracking and EEG

Teaching Experience

Spring 2024 **Graduate Teaching Assistant**, *PSY129L Lab In Perception*, Prof. Miguel Eckstein, UCSB.
Held weekly Lab Sections and Office Hours, graded lab reports

Fall 2023 **Graduate Teaching Assistant**, *PSY120L Advanced Research Methods*, Prof. Vanessa Woods, UCSB.
Held weekly Lab Sections and Office Hours, graded research papers and poster presentations

Winter 2023 **Graduate Teaching Assistant**, *PSY10A Research Methods*, Prof. Nicole Albada, UCSB.
Held weekly Lab Sections and Office Hours, graded assignments and Research Proposals

Fall 2022 **Graduate Teaching Assistant**, *PSY130 Perception and Vision*, Prof. Miguel Eckstein, UCSB.
Lecture TA to 100-odd undergraduates,held weekly Office Hours, and graded quizzes/tests

Spring 2022 **Undergraduate Teaching Assistant**, *LS2201 Evolutionary Biology*, Dr. Anindita Bhadra, IISER Kolkata.
Responsibilities included proctoring, grading, and leading discussions

Fall 2021 **Undergraduate Teaching Assistant**, *LS3102 Cell Biology*, Dr. Bidisha Sinha, IISER Kolkata.
Responsibilities included proctoring, and leading discussions

Achievements

2022 **Qualified UGC-NET (June 2021) Junior Research Fellow (JRF)**.
Percentile: 99.44, Rank: 100

2022 **Vision Sciences Society 2022 Travel Award Recipient**.

2017 **DST-INSPIRE Scholarship (JBNSTS Senior Scholar)**.
Awarded the prestigious DST-INSPIRE (Department of Science and Technology-Innovation in Science Pursuit for Inspired Research, Govt. of India) Scholarship (JBNSTS Senior Scholarship: ranked among **top 10 scholars**)

2015 **Jagadish Bose National Talent Search Junior Scholar**.
Awarded the JBNSTS Junior Scholarship, Govt. of West Bengal

Conferences and Workshops

May, 2024 **Vision Sciences Society Annual Meet**.
Presented a poster on my research at VSS 2024

April, 2024 **Mellichamp Mind and Machine Intelligence Summit**.
Attended a series of talks on the parallels and relationships between Human and AI creativity

July, 2023 **Gordon Research Conferences and Seminar: Eye-Movements**.
Attended and delivered a talk on my research, and was part of panel discussion

May, 2023 **Vision Sciences Society Annual Meet**.
Attended VSS 2023

April, 2023 **Mellichamp Mind and Machine Intelligence Summit**.
Attended a series of talks on the parallels and relationships between Human and AI cognition

May, 2022 **Vision Sciences Society Annual Meet**.
Presented a poster on my Masters' research project

March, 2021 **Brain Awareness Week, IIT Gandhinagar**.
Selected for and attended a series of online talks, workshops and panel discussions organized as part of the Brain Awareness Week, hosted over a week by the Centre for Cognitive and Brain Sciences, IITGN

January, 2021 **7th Annual Conference of Cognitive Science**.
Attended a series of online talks and panel discussions organized and hosted over 3 days by the Association for Cognitive Science (ACS)

November, 2020 **MathWorks Webinar Series**.
Attended webinars on the topics of Data Science, Machine Learning and introductory Deep Learning with emphasis on the application of MATLAB programming language

January, 2019 **Understanding Behaviour**.
Attended the Understanding Behaviour conference in person, organized hosted over 3 days by IISER Kolkata, on behavioural research across disciplines and methods of study

December, 2017 **Vijyoshi (DST-INSPIRE) National Science Camp**.
Attended the annually-held three-day national science camp organized by Dept. of Science and Technology, Govt. of India

Technical Skills

Languages **Python (including PsychoPy), MATLAB (including Psychtoolbox and EEGLAB), R**

Softwares **EyeLink, Blender, Photoshop, Origin, ImageJ, LaTeX**

Techniques **Eye-Tracking, EEG, Pattern Recognition, Machine Learning**

Standardized Test Scores

July, 2021 **General GRE**.
Analytical Writing: 5.0, Verbal Reasoning: 163, Quantitaive Reasoning: 165

July, 2021 **TOEFL-iBT**.
118 (Reading: 30, Listening: 30, Speaking: 28, Writing: 30)

Language Skills

Native Bengali and Hindi, Fluent English, Elementary Spanish.

Extra-curricular Activities and Skills

Teaching

Had been actively involved in teaching as a part of the student-led initiative of my alma mater IISER Kolkata, namely *Ek Pehal* (An Initiative), to teach Science, Math and English to young children from local under-privileged families for 2 years (2018-2020)

Extra-curricular

- Published a book on a collection of my poems
- Achieved first position in a Sci-poetry competition organized as a collaboration between the IISER-K Literary and Science Clubs, 2021
- Selected for and completed a trek to Brahmatal Summit (>12000 feet) in Uttarakhand, India (organized by IISER Kolkata, 2020)
- Orange belt holder in martial arts (Shotokan Karate, 2018)
- Passionate about literature, writing, running, cycling, films and music, and I turn to my guitar, ukulele, books and poetry to rejuvenate my mind

Strengths

Perseverance, diligence, drive, critical thinking, team-work, scientific writing, time-management, interdisciplinary research