Souradeep Chakraborty

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Research Interests

To contribute high-quality research and software development in Computer Vision and Machine Learning, with a special focus on Generative AI and Multi-modal learning.

Education

2018–2024 **Ph.D. at Stony Brook University**, *Department of Computer Science*, Stony Brook, NY, Thesis: Decoding Factors Influencing Human Visual Attention, Advisor: Prof. Dimitris Samaras and Prof. Gregory Zelinsky, , **GPA: 3.88/4**.

2016–2018 **M.Sc. at University of California, Santa Barbara**, *Electrical and Computer Engineering Department*, Santa Barbara, CA, Advised by: Prof. Yon Visell, **GPA: 3.87/4**.

2013–2015 **M.Tech at Indian Institute of Technology, Kharagpur**, Visual Information Processing and Embedded Systems, *Electronics and Electrical Communication Engineering Department*, Kharagpur, India, Co-advised by: Prof. Pabitra Mitra and Prof. Ritwik K. Layek, **CGPA: 9.01/10**.

2008–2012 **B.Tech at National Institute of Technology, Durgapur**, *Electronics and Communication Engineering Department*, Durgapur, India, **CGPA: 8.82/10**.

Work Experience

Dec 2024 – Present **Applied Scientist**, *Amazon, Seattle, USA*.
Org.: Personalization (Stores), Working on: Generative Media, Recommendation Systems

May 2023 – August 2023 **Applied Scientist Intern**, *Amazon, Palo Alto, USA*.
Team: Visual Search and Augmented Reality (VS&AR). Manager: Amit Kumar K. C. Project: Instruction-guided garment image editing in the wild (Generative AI).

May 2022 – October 2022 **Applied Scientist Intern**, *Amazon, Palo Alto, USA*.
Team: Visual Search and Augmented Reality (VS&AR). Manager: Amit Kumar K. C. Project: Unsupervised and semi-supervised co-salient object detection.

Nov. 2015 –June 2016 **Research Assistant**, *Video Analytics Lab, SERC, Indian Institute of Science, India*.
Project: Deep learning based automatic image colorization and automatic image completion.

June 2015 – Nov 2015 **Software Engineer**, *Cerner Healthcare Solutions, India*, Bangalore, India.
Work: Java based web development with patient records and image databases.

July 2012 – July 2013 **Software Engineer**, *Samsung Research Institute, Bangalore*, Bangalore, India.
Work: at Mobile Communication Division on the Radio Interface Layer of North American phones.

Research Experience

Mar 2019-Dec 2024 **Computer Vision Lab, Stony Brook University**, *Stony Brook, NY*,
Advisors: Prof. Dimitris Samaras, Prof. Gregory Zelinsky,
Topics: Cognitive pathology - Human visual attention analysis on histopathological images, Saliency prediction in graphic designs, Visual attention modeling.

Sept. 2016–2018 **RE Touch Lab, University of California Santa Barbara**, *Santa Barbara, CA*,
Advised by: Prof. Yon Visell, Topic: Deformable hand capture from multi-view hand silhouettes with pose estimation using deep neural networks.

Nov. 2015 – June 2016 **Video Analytics Lab, SERC, Indian Institute of Science**, *Bangalore, India*,
Advised by: Prof. R. Venkatesh Babu,
Topics: Deep learning based automatic image colorization, Image super-resolution using deep residual networks, Deep Image inpainting with region prediction at hierarchical scales.

July 2013– July 2015 **Computer Science and Engineering Department, IIT Kharagpur**, *Kharagpur, India*,
Advised by: Prof. Pabitra Mitra, Prof. Ritwik K. Layek,
Topics: Salient image region detection, Image co-segmentation, Simulation of around the corner imaging and shape reconstruction using curved reflecting surfaces.

May 2011– July 2011 **Center for Soft Computing Research, Indian Statiscal Institute**, *Kolkata, India*,
Advised by: Prof. Sankar K. Pal, Prof. Pabitra Mitra,
Topic: Active learning with spatial and hyper-spectral data for remote sensing image classification.

Selected Publications

Aug. 2025 **Measuring and Predicting Where and When Pathologists Focus their Visual Attention while Grading Whole Slide Images of Cancer**,
Souradeep Chakraborty*,et al.*, Accepted at Medical Image Analysis, Elsevier (I.F: 11.8).

Oct. 2024 **Self-supervised co-salient object detection via feature correspondence at multiple scales**,
Souradeep Chakraborty*, Dimitris Samaras*, Presented at ECCV 2024.

Oct. 2024 **Decoding the visual attention of pathologists to reveal their level of expertise**,
Souradeep Chakraborty*, Rajarsi Gupta, O. Yaskiv, P. Friedman, N. Sheuka, D. Perez, C. Friedman, Gregory Zelinsky, Joel Saltz, Dimitris Samaras*, Presented at MICCAI 2024.

Jan. 2024 **Unsupervised and semi-supervised co-salient object detection via segmentation frequency statistics**,
Souradeep Chakraborty*, Shujon Naha, Muhammet Bastan, Amit Kumar K C, Dimitris Samaras*, IEEE WACV 2024 (Waikoloa, Hawaii), [work done at my internship at **Amazon**].

Mar. 2022 **Predicting visual attention in different graphic design documents**,
Souradeep Chakraborty*, Zijun Wei, Conor Kelton, Seoyoung Ahn, Aruna Balasubramanian, Gregory Zelinsky, Dimitris Samaras*, Published at IEEE Transactions of Multimedia, March 2022.

Feb. 2022 **Weighting the factors affecting attention guidance during free viewing and visual search: The unexpected role of object recognition uncertainty**,
Souradeep Chakraborty*, Gregory Zelinsky, Dimitris Samaras*, Journal of vision, 22(4), 13-13.

April 2016 **A dense subgraph based algorithm for compact salient image region detection**,
Souradeep Chakraborty*, Pabitra Mitra*, Computer Vision and Image Understanding, Elsevier, Vol. 145, April 2016, pp. 1 – 14.

Technical Skills

Languages Python, C++, C, MATLAB, JavaScript.

Libraries PyTorch, TensorFlow, OpenCV.

Talks and positions

- Reviewer for CVPR, ECCV, WACV, IEEE TMM, MICCAI, Medical Image Analysis
- Talks (oral presentation) at ISBI, 2022 and Vision Sciences Society (VSS) conference, 2022