Souradeep Chakraborty

Department of Computer Science, Stony Brook University
Stony Brook, NY 11794-2424
+1 - (631) 320-6641
souchakrabor@cs.stonybrook.edu
https://sourachakra.github.io/

Research Interests

To make high quality research contributions/software development in topics related to **Computer Vision**, **Computer Graphics**, and **Machine Learning**.

Education

2018–Present **Ph.D. at Stony Brook University**, *Department of Computer Science*, Stony Brook, NY, Advisor: Prof. Dimitris Samaras, Current research topic: Visual attention modeling on pathology images, **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

May 2023 – August 2023 **Applied Scientist Intern**, *Amazon, Palo Alto, USA*.
Team: Visual Search and Augmented Reality (VS&AR). Project: Instruction-guided garment image editing.

May 2022 – October 2022 **Applied Scientist Intern**, *Amazon, Palo Alto, USA*.
Team: Visual Search and Augmented Reality (VS&AR). Project: Unsupervised image co-saliency detection.

Nov. 2015 –June 2016 **Research Assistant**, *Video Analytics Lab, SERC, Indian Institute of Science, India*.
Worked on: Automatic Image Colorization and Automatic Image Completion using Deep Learning based techniques. Frameworks used: Caffe, Lassagne

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

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

Research Experience

Mar 2019-Present **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.

Publications

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.

June. 2022 **Characterizing Target-Absent Human Attention**, *Y. Chen, Z. Yang,* ***Souradeep Chakraborty***, *S. Mondal, S. Ahn, Dimitris Samaras, Minh Hoai, Gregory Zelinsky*, CVPR Workshops, 2022..

Jan. 2022 **Visual attention analysis of pathologists examining whole slide images of Prostate cancer**,
Souradeep Chakraborty, *Ke Ma, Rajarsi Gupta, Beatrice Knudsen, Joel Saltz, Gregory Zelinsky, Dimitris Samaras*, IEEE International Symposium on Biomedical Imaging (ISBI) 2022 (**Oral**).

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.

Dec. 2016 **Deep image inpainting with region prediction at hierarchical scales**,
Souradeep Chakraborty, *J. N. Kundu and R. V. Babu*, ICVGIP 2016, Article No. 33.

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.

Nov. 2015 **A site entropy rate and degree centrality based algorithm for image co-segmentation**,
Souradeep Chakraborty, *Pabitra Mitra*, Journal of Visual Communication and Image Representation, Elsevier, Vol. 33, Nov. 2015, pp. 20 – 30.

Technical Skills

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

Libraries PyTorch, TensorFlow, Keras, OpenCV.

Talks and positions

- Reviewer at CVPR, ECCV, IEEE Transactions on Multimedia, MICCAI, Visual Computer
- Talks (oral presentation) at ISBI, 2022 and Vision Sciences Society (VSS) conference, 2022