

# Sreya Banerjee

GRADUATE RESEARCH ASSISTANT · PHD STUDENT

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## Education

### University of Notre Dame

PHD STUDENT IN DEPT. OF COMPUTER SCIENCE AND ENGINEERING

- Advisor: Dr. Walter J. Scheirer; **GPA:** 3.75

Notre Dame, Indiana, USA

Aug. 2015 - Present

### West Bengal University of Technology

BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY

- Tuition Scholarship which is given to promising students in IT Dept.

Kolkata, India

Aug. 2006 - May, 2010

## Work Experience

### Cognizant Technology Solutions Pvt. Ltd

PRODUCT SPECIALIST & ASSOCIATE

- Lead offshore developer on mainframe based Group Annuity Payment System and Pension Close-out System of US-based leading Insurance Company. Worked directly with clients.
- Held position as the Software Configuration Manager of the team.
- Held position as the Defect Prevention Coordinator of the team.

Kolkata, India

July, 2010 - July, 2015

## Publications

1. **S. Banerjee\***, R. Vidal\*, [et. al]. "Bridging the Gap Between Computational Photography and Visual Recognition", to be submitted to *IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)* \* denotes equal contribution
2. **S. Banerjee**, W. Scheirer and L. Li, "An Extreme Value Theory Model of Cross-Modal Sensory Information Integration in Modulation of Vertebrate Visual System Functions", under review for *Frontiers in Computational Neuroscience*, August 2018.
3. **S. Banerjee\***, R. Vidal\*, K. Grm, V. Struc and W. Scheirer, "UG2 : a Video Benchmark for Assessing the Impact of Image Restoration and Enhancement on Automatic Visual Recognition", at the *Winter Conference on Applications of Computer Vision (WACV 2018)*, March 2018, Lake Tahoe, Nevada/California, USA. \* denotes equal contribution
4. J. Chen, **S. Banerjee**, A. Grama, W. Scheirer, and D. Z. Chen, "Neuron Segmentation Using Deep Complete Bipartite Networks", at the *20th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2017)* September 2017, Quebec City, Canada.
5. **S. Banerjee**, A. Halder and A. Banerjee, "An Efficient Automatic Image Segmentation Algorithm based on Modal Analysis and Mutational Agglomeration", at the *IEEE International Conference on Computer & Communication Technology* September 2010, Allahabad.

## Research Experience

### Cross-modal sensory information integration in Zebrafish Olfacto-Retinal Centrifugal pathway

LEAD RESOURCE, FUNDED BY ARMY RESEARCH LABORATORY

- Designed a new computational model of vision that describes the relationship between olfactory input and visual sensitivity of zebrafish (*Danio rerio*) based on the principles of the statistical extreme value theory. As zebrafish maintains high evolutionary proximity to mammals, our model can be extended to other vertebrates as well.
- Analyzed data from wet-bench biological experiments and remodelled them to fit into machine learning models.

Notre Dame, IN

Aug. 2016 - Present

## Image Restoration and Enhancement for Visual Recognition

Notre Dame, IN

LEAD RESOURCE, FUNDED BY IARPA & NVIDIA

Aug. 2016 - Present

- Research on image restoration and enhancement to improve object recognition and classification in unconstrained environment and the impact of problematic conditions (motion blur, lighting, distance from source, weather) on state-of-the-art recognition algorithms.
- Evaluated the suitability of state-of-the-art image restoration and enhancement techniques from computational photography for image pre-processing before recognition.
- Collected, annotated and released a new benchmark data set consisting of public video content captured by UAVs and manned gliders, as well as controlled videos taken on the ground at Notre Dame.
- **Organized** a prize challenge workshop at **CVPR, 2018** that saw participation from research teams around the globe with 24 unique algorithms submitted for the challenge.

## Neuron Segmentation Using Deep Complete Bipartite Networks

Notre Dame, IN

SECONDARY RESOURCE, COLLABORATION WITH HARVARD & NOTRE DAME

Aug. 2015 - Aug. 2016

- Designed a new FCN-type deep learning model, called deep complete bipartite networks (CB-Net), and a new scheme for leveraging approximate instance-wise annotation to train our pixel-wise prediction model.
- Analyzed and annotated data for training the model.
- Proposed model outperforms the state-of-the-art FCN models and produces neuron segmentation results of remarkable quality.

## Poster Presentation

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### Women in Computer Vision, CVPR-Workshop & Midwest Computer Vision Workshop

Salt Lake City, UT & Ann Arbor, MI

PRESENTER

Jun. 2018 & Mar. 2018

- **Topic:** UG2: a Video Benchmark for Assessing the Impact of Image Restoration and Enhancement on Automatic Visual Recognition

### 46th Annual Meeting of the Society for Neuroscience (SfN 2016)

San Diego, CA

PRESENTER

Nov. 2016

- **Topic:** Cross-modal Sensory Information Integration in Modulation of Vertebrate Visual System Functions

## Honors & Awards

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2018 **Travel Grant**, CRA-Women Grad Cohort Workshop

San Francisco, CA

2017 **Travel Grant**, CRA-Women Grad Cohort Workshop

Washington D.C.

2016 **Kaneb Center Outstanding Teaching Assistant**, Dept. of Computer Science, University of Notre Dame

Notre Dame, IN

## Skills

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<b>Programming</b>	Python, Matlab
<b>Deep Learning Frameworks</b>	Keras, Tensorflow, familiarity with Matconvnet
<b>Tools and Libraries</b>	OpenCV, LaTeX
<b>Languages</b>	English, Hindi, Bengali

## Relevant Courses

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Graduate Operating Systems

Graduate Architecture

Graduate Complexity and Algorithms

Data Science

Computer Vision

Neural Networks

Topics in Physiology

Case Studies - Comp-Based Entrepreneurship