Sudeep Salgia

Third Year PhD student
Electrical and Computer Engg. Dept.
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Research Interests

I am passionate about math-intensive problems that contribute to a better understanding and wider applications of fundamental principles of learning. I like to work on theoretical aspects of Machine Learning, broadly around the fields of Statistical Learning, Stochastic Optimization, non-parametric Bayesian Optimization, Hypothesis Testing, and Active Learning in online setups.

Education

Aug'18-Present	**Cornell University**. PhD Electrical and Computer Engineering Advisor: Prof. Qing Zhao CGPA 4.18/4.0
July'14-May'18	**Indian Institute of Technology Bombay**. Bachelor of Technology in Electrical Engineering (with Honors) Minor in Computer Science CGPA 9.74/10

Peer-Reviewed Publications

○ Stochastic Coordinate Minimization with Progressive Precision for Stochastic Convex Optimization [Paper]
Sudeep Salgia, Qing Zhao, Sattar Vakili
ICML 2020

○ Stochastic Gradient Descent on a Tree: an Adaptive and Robust Approach to Stochastic Convex Optimization [Paper]
Sattar Vakili, **Sudeep Salgia**, Qing Zhao
Allerton 2019

○ On Bandlimited Spatiotemporal Field Sampling with Location and Time Unaware Mobile Sensors [Paper]
Sudeep Salgia, Animesh Kumar
ICASSP 2018

Research Projects

Jul'17-Apr'18 **Sampling and Estimation of Bandlimited fields**,
Undergraduate Thesis,
Advisor: Prof. Animesh Kumar.
- Obtained bounds on the reconstruction error in estimating a spatially bandlimited field sampled at unknown locations obtained from an unknown autoregressive process
- Extended the above analysis to obtain similar bounds for reconstructing spatiotemporally varying fields from samples obtained at unknown locations and unknown time stamps

May'17-Jul'17 **Automated Methods for MS Lesion Segmentation**,
Research Internship, Weill Cornell,
Advisor: Prof. Yi Wang.
- Formulated a new mathematical model to detect lesions using only T2 images and implemented the same in consonance with a level-set segmentation based approach

May'16-Nov'16 **Algorithms for Information Restoration in images**,
Research Project,
Advisor: Prof. Suyash Awate.
- Developed a novel image inpainting algorithm that uses global information to restore images while ensuring smoothness
- Outperformed the state of the art algorithms, both in terms of speed and quality metrics on various datasets

Scholastic Achievements and Awards

2018 Awarded Jacobs Scholar Fellowship at Cornell University

2018 Silver Medallist in the Class of 2018, IIT Bombay

2014 Secured All India Rank 214 in JEE Advanced 2014 among 150,000 selected candidates from over all India

2017 Selected for the final round of Honda YES Scholarship, among top 20 students in India on the basis of views on and contribution to eco-technology

2015 Best Application Award for our project on Sign Language to Text Converter at the Tech & RnD Expo, IIT Bombay

2005-2012 Stood among Top 100 in India in various Math, Science and Cyber Olympiads

Skills and Coursework

Math Measure Theory, Probability, Linear Algebra, Statistical Learning Theory, Convex Optimization, Real Analysis, Topology

EE Optimal Control, Stochastic Systems : Estimation and Control, Information Theory, Signal Processing

Programming MATLAB, Python, C++

Positions of Responsibilities

Sep'18-Dec'19   Member of Graduate team of International Students Union at Cornell University

May'17-Apr'18   **Department Academic Mentor**, *IIT Bombay*.
- Selected among 22 students based on interpersonal skills and academic performance to mentor students with academic backlogs and to help them address concomitant social problems

Jan'18-Apr'18   **Teaching Assistant for Linear Algebra**, *IIT Bombay*.

Jul'17-Apr'18   **Volunteer**, *Abhyasika, IIT Bombay*.
- Abhyasika is an initiative that runs tutorials for underprivileged children and supports them in their education

May'16-Apr'17   **Manager, Technical Projects**, *IIT Bombay*.
- Shouldered key responsibility for evaluation and allocation of student driven socio-technical projects
- Spearheaded collaboration with London School of Economics for their Enactus program and creation of National Innovation Club at IIT Bombay

Jan'16-Apr'16   **Teaching Assistant for Electromagnetism**, *IIT Bombay*.

Co-Curricular Activities

- Secured sixth position in a global Creative Writing competition in Mood Indigo 2014 - the cultural fest of IIT Bombay
- Amongst top active contributors at Math StackExchange (top 11%)
- Was a Moderator at Brilliant.org, a community based platform for development of skills in Math and Science for international competitive exams
- Articles published in various print media (English and Hindi) during the last ten years
- Hobbies: Painting, sketching, Badminton, Cricket