Anurag Singh

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Education

Netaji Subhas Institute of Technology, University of Delhi *August 2014- May 2018*
Bachelor of Engineering (Honours) in Information Technology
First Class with Distinction 79.66% (equivalent GPA 8.72/10)

Research Experience

Indian Institute of Science Bangalore
Research Fellow ***Advisor: Prof. Soma Biswas*** *July 2019- Present*

- Working in Image Analysis and Computer Vision Lab, Dept of Electrical Engineering on class and domain data imbalance problems in cross modal retrieval.

IIIT Delhi New Delhi
Research Associate ***Advisor: Prof. AV Subramanyam*** *Aug 2017 - March 2018*

- Design of novel models and metrics for representative summarization of large image and video datasets. Dynamic Graph Learning for unsupervised and weakly supervised person reidentification.

Jamia Milia Islamia New Delhi
Research Intern ***Advisor: Prof Mohommad Sharif*** *Nov 2016-Jan2017*

- Built software to estimate the reservoir capacity for water levels of dams, given inflow and discharge. Built a tool for inflow prediction using Thomas Fiering Model for Bhakhra Nagal Reservoir. Inflow prediction, anomaly detection and optimal reservoir operations for Bhakra Nagal Reservoir. [Codes] [Report]

Selected Publications

1. **A. Singh**, DK Sharma, Joel JPC Rodrigues **SumDL: Unsupervised Summarization of Image Collections**. Under review at Expert systems with Applications [pdf]

2. **A. Singh**, L. Virmani, AV Subramanyam. **Image Corpus Representative Summarization**. IEEE International Conference on Multimedia Big Data 2019 [pdf]
(Honourable Mention for Best Paper Award)

3. **A. Singh**, DK Sharma. **Image Collection Summarization: the past, present and future.** Data Visualization and Knowledge Engineering, Springer, Cham (2019) [pdf]

4. DK Sharma, **A. Singh**, A. Khanna, and A. Jain. **Evaluation of parameters and techniques for genetic algorithm based channel allocation in Cognitive Radio Networks**.
Tenth IEEE International Conference on Contemporary Computing(IC3 2017). [pdf]

Publications in Preparation

- T Dutta, **A.Singh**, Soma Biswas **Style-guided zero shot sketch-based image retrieval**.
For IEEE Transactions on Multimedia, 2020

- **A.Singh**, V.Chowdhary, AV Subramanyam **Dynamic Graph Learning based Re-ranking for Person Re-Identification**.
For CISS:2020 54th Conference on Information Science and Systems, Princeton University.

Industry Experience

Royal Bank of Scotland Gurgaon

Software Engineer - Development *June 2018-July 2019*

- Lead the effort for access management to workplace and payments via real time open set face recognition. Involved in review of vendor based solutions by IBM, Wipro and Morpus.
- Designed architecture to perform recognition with low latency on edge compute. Built a proof of concept and convinced management to lead in house development of minimum viable product. [Code]

Software Development Intern *Summer 2017*

- Built a utility to replay lost brokerage messages. Saved delay time and late fees. Considering performance, offered a full-time position.

Mini Academic Projects

Commerical DNA Storage (B.E. Thesis Project) [Report] [Webpage]

Advisor: Dr. Sonika Bhatnagar and Dr.Deepak Kumar Sharma *Nov 2017 - May 2018*

- Design of viable Glacier storage in wet-lab synthesized DNA. Theoretically, model reduces DNA storage costs by factor of 10x. **Received one of the highest grades** (90+) in my batch for the project.

Unsupervised transliterated Hindi Detection [Report]

Advisor: Dr.Deepak Kumar Sharma, Dr. Vikas Maheshkar *June 2017 - Oct 2017*

- Built MLP NN for Language identification of Hindi transliterated text in roman script. Curated corpus of 10K sentences and novel features to train just network with accuracy of 99%. Presentation of work appreciated as **one of top papers of conference** [link].

2048 Solver [Code] [Webpage]

End of Course Project *December 2015*

- Solver for web based 2048 using expectiminmax algorithm.

Achievements

- **Honorable Mention Award** and **Best Paper Nomination** (top 4 papers) at IEEE International Conference on Multimedia BigData 2019, NUS Singapore **(See Pub. #2)**
- Annual Merit Scholarship (2014-2018) awarded to top 25% students in a batch as tuition waiver for academic exellence.
- Top 0.2% in All India Mathematics Proficiency Test conducted by CBSE among 100,000 candidates.
- Top 0.3% in Joint Entrance Examination 2014 (JEE Mains) in 15,00,000 candidates.

Courses

Theory of Computation, Neural Networks and Soft Computing, Distributed Operating Systems, Information Theory and Coding, Advanced Calculus, Mathematics for Machine Learning (MOOC), Quantum Mechanics for Scientist and Engineers (MOOC)