Utkarsh Agarwal

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Department of Computer Science and Engineering
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Educational Qualifications

Year	Degree	Institution	GPA/Percentage
2017(Expected)	Bachelor of Technology	Indian Institute of Technology, Kanpur	9.3/10
2013	AISSCE (CBSE 12th)	DAV Public School, Kota	92.4
2011	AISSE (CBSE 10th)	Mayoor School, Ajmer	10/10

Scholastic Achievements

- Secured All India Rank (AIR) **132** (top 0.09%) in **IIT Joint Entrance Examination 2013** amongst **0.15 million** candidates
- Awarded **Academic Excellence Award** (given to **top 5%** students) for exceptional performance in the academic year 2014-15
- Secured **99.87** percentile in **JEE Main 2013** amongst **1.4 million** students from all over India
- Selected to appear in **INJSO, 2010; INAO (Jr.), 2010** and **INChO, 2013** for being amongst the **top 300 in India**

Professional Experience

Summer Internship at Samsung Electronics HQ, South Korea   *(May'16 - Jul'16)*

○ **Project Spark**: To expedite the data processing and query execution workflows of a commercial big data analytics tool
  - Changes recommended to the application architecture and the code base were pushed to the final implementation of the tool

  Data Processing
  - Achieved increased stability and more than **2X improvement** in the worst case performance of various component applications, **doubling the raw data processing capacity** of the commercial tool by tuning and optimising Apache Spark configuration
  - Automated some aspects of performance tuning to enable the tool to optimise itself in various performance scenarios

  Query Execution
  - Studied the already existing code base in detail and recommended changes to the application architecture and code base
  - Achieved **maximum 4X improvement** (75 percent reduction) and minimum 2X improvement (50 percent reduction) in query time across all queries with an average improvement of 2.89X

Work Experience

Most Violated Constraint for Concentrated ROC (CROC)   *(Jan'16 - Ongoing)*
Mentor: Prof. Purushottam Kar, Department of Computer Science and Engineering, IIT Kanpur

- **Proposed a novel algorithm** for optimising Concentrated ROC (CROC) and partial CROC (pCROC), performance measures in Machine Learning for optimising early retrieval using state of the art cutting plane techniques
- Presently running experiments on offline and online learning using the proposed algorithm and **aiming for a publication**

Convex Surrogates for Optimising AUC related performance measures   *(Jul'16 - Ongoing)*
Mentor: Prof. Purushottam Kar, Department of Computer Science and Engineering, IIT Kanpur

- Extended the work on CROC and used bipartite and full ranking techniques to solve a bunch of more complex performance measures viz. Rate Weighted AUC, Robust Initial Enhancement which are modifications of AUC and focus on early retrieval

Object Detection and Classification in Traffic Surveillance Video   *(Jan'16 - Apr'16)*
Mentor: Prof. Harish Karnick, Department of Computer Science and Engineering, IIT Kanpur

- Extracted regions of interest from the video using image processing algorithms and refined them using NMS (Non-maximum suppression) algorithm on a pyramid of gaussians built from the subframes of the initial regions
- Experimented with different feature representations of images like HoG and SIFT for training the classifiers
- Achieved accuracy of **85 percent** and precision of **82 percent** using Linear SVM as classifier and HoG feature representation

Relevant Courses

Machine Learning Techniques	Data Structures and Algorithms	Operating Systems	Compiler Design
Principles of Databases	Online Learning and Optimisation#	Computer Networks	Probability and Statistics
			# : *Ongoing*

Technical Skills

- Programming/ Scripting Languages: Assembly, C, C++, Bash, Python, Java, SQL, HTML, CSS
- Platforms/ Tools/ Frameworks: Apache Spark, Hadoop, YARN, Chef, Graphite, Latex, Octave, Django

Extra-Curricular Achievements

Competitive Programming

- Active participant in contests on Codeforces, Codechef and Spoj with more than **300** problems solved
- Rated **expert** on Codeforces with a peak rating of **1716**