Pranjal **Gupta**

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EXPERIENCE

Data Systems Group, University of Waterloo, Canada
Graduate Research Assistant, (Sep 2019 - Present)

- Working on Graphflow, a single-node in-memory property graph database system.
- I am currently researching on property storage data models, compression in data, indices and adjacency list with a goal of minimizing memory footprint.

Advanced Data Analytics and Parallel Technologies Lab, BITS Pilani, India
Undergraduate Research Assistant, (Jan 2018 - July 2018)

- Implemented a system for detecting temporal events at a very microscopic level from a stream of tweets and creating a multi-level hierarchy of events.
- Implemented an abstractive summarization attention-based LSTM neural network model for generating a storyline out of the tweets in the hierarchy of events.

Database and Data Mining Lab, University of Manitoba, Winnipeg, Canada
MITACS Graduate Research Intern, (May 2017 - July 2017)

- Developed a new frequent-pattern mining algorithm that switched between classical algorithms ECLAT, VIPER and DECLAT, with an objective to minimize the overall memory footprint of the process for certain and uncertain datasets.

Zomato Media Pvt. Ltd, Gurgaon, India *(May 2016 - July 2016)*
Intern in the Data Analytics team.

- Implemented A/B Testing framework and other statistical tools for evaluating effectiveness of new features on the web and mobile applications for Zomato.

Homi Bhabha Centre for Science Education, TIFR, Mumbai, India
Intern in Gnowledge Lab (May 2015 - July 2015)

- Implemented Analytics, Data-visualization tools and RSS feeds on a studio-based learning platform, built over an in-memory knowledge-base management system.

PROJECTS

Experimental evaluation of functions and MapReduce on serverless computing environment *(Feb 2019 - Apr 2019)*

- Benchmarked functions running on serverless infrastructure (kubernetes, docker and open-faas) to study performance metrics like latency, compute overhead, I/O overhead and throughput, and system scalability on hot and cold start.
- Implemented a simple MapReduce task on serverless infrastructure.

Discovering SHACL constraints on RDF Datasets *(Feb 2019 - May 2019)*

- Contributed to an ongoing project on discovering constraints in RDF dataset using **SHA**pe **C**onstraint **L**anguage.
- My contributions include enhancing node feature discovery, optimizing search algorithm by pruning the constraint space, ranking discovered constraints by estimating their relevance and doing experimentation.

Constructing detailed image captions using Neural Nets *(Jan 2017 - Dec 2017)*

- Designed a attention-based RNN model based on the statistical probability for generating detailed captions for an image, using auxiliary contextual information; inspired by `encoder-decoder` machine translation models.

Wikie: the retrieval system *(Oct 2016 - Nov 2016)*

- Developed a vector-space model based search engine on 1M Wikipedia pages.
- The search result ranking mechanism employed PageRank scoring (for measuring importance of a page) and Elo Ratings (for measuring popularity).

TECHNICAL SKILLS

JAVA (junit, mockito), Python (numpy, pandas, Tensorflow, Keras, scikit-learn), C/C++ (gdb, valgrind, boost), SQL, Cypher, Spark, bash, git.

RELEVANT TOPICS IN CS

Graph Databases, Database Systems,Data Cleaning, Adv Distributed Systems, Graphs and Networks, Social Network Analysis, Data Structures and Algorithms, Information Retrieval, Data Mining, AI, Comp Networks, Object-oriented Programming.

EDUCATION

M. Math (thesis) in Computer Science
University of Waterloo *(Sep 2018 - Present)*
Advisor: Prof. Semih Salihoglu
CGPA: 3.95/4.0

B.E. (Hons) in Computer Science
M.Sc. (Hons) Mathematics
BITS Pilani, India *(Aug 2013 - May 2018)*
CGPA: 3.85/4.0 (Passed with distinction)

AWARDS AND SCHOLARSHIPS

- International Masters Student Award & UW Graduate Scholarship at UWaterloo **2018**
- MITACS Graduate Fellowship **2018**
- Ranked 1st in class of 2013 of M.Sc.(Hons) Mathematics at BITS Pilani **2018**
- Best Student Award at BITS Pilani **2017**
- 2nd prize at the technical festival of BITS Pilani for project prototype in “Software Dev - Adaptive Technology” **2015**
- MCN Merit Scholarship at BITS Pilani **2013**

TEACHING ASSISTANTSHIPS

- **Fall / Summer / Winter 2019:** Databases for Business at UWaterloo.
- **Fall 2018:** Elementary Algorithm Design and Data Abstraction at UWaterloo.
- **Fall 2017:** Data Mining at BITS Pilani.
- **Fall 2016:** Object-oriented programming at BITS Pilani.

PUBLICATION

Multilevel Event Detection, Storyline Generation Summarization for Tweet Streams, *IEEE Transactions on Computational Social Systems*, *May 2019*