Ashim Gupta

Contact Information

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Research Interests

Analysis and Explainability of NLP Models, Logic and Neural Networks, Machine Translation, Sanskrit Computational Linguistics, Low-resource Multi-lingual NLP

Current Position

School of Computing, University of Utah

Graduate Research Assistant
Advisor: Prof. Vivek Srikumar — **Aug 2019 - Present**

Education

School of Computing, University of Utah

PhD, Computer Science (CGPA: 3.97/4)
Advisor: Prof. Vivek Srikumar — **Aug 2019 - Present**

Indian Institute of Technology - BHU

B.Tech, Electrical Engineering (CGPA: 8.27/10) — **July 2012 - May 2016**

Research Experience

Computer Science Department, IIT - Kharagpur

Project Officer, NLP Researcher — **June 2017 - March 2019**
Advisors : Prof. Sudeshna Sarkar, Prof. Pawan Goyal

Engineering Experience

Proptiger.com, Gurgaon, India

Software Engineer (Grade 3) — **August, 2016 - April, 2017**

Publications

Gupta A., Kvernadze G., Srikumar V., *BERT & Family Eat Word Salad: Experiments with Text Understanding*, Under Submission at AAAI 2021 (Formerly accepted at EMNLP Findings)

Krishna A., **Gupta A.**, Goyal P., Santra B., Satuluri P., *A Graph Based Framework for Structured Prediction Tasks in Sanskrit*, ACL - Computational Linguistics Journal (Accepted for December 2020 Issue) [Paper]

Krishna A., **Gupta A.**, Garasangi D., Satuluri P., Goyal P., *Keep It Surprisingly Simple: A Simple First Order Graph Based Parsing Model for Joint Morphosyntactic Parsing in Sanskrit*, EMNLP 2020 [Paper]

Gupta A., Krishna A., Goyal P., Hellwig O., *Evaluating Neural Morphological Taggers for Sanskrit*, SIGMORPHON - ACL 2020 [Paper]

Krishna A., **Gupta A.**, Garasangi D., Sandhan J., Satuluri P., Goyal P., *Neural Approaches for Data Driven Dependency Parsing in Sanskrit*, Technical Report [Preprint]

Gupta A., Goyal P., Sarkar S., *Fully Contextualized Biomedical Named Entity Recognition.* 41st European Conference on Information Retrieval(ECIR), 2019 [Paper]

Pramanick M, **Gupta A.**, Mitra P. *An LSTM-CRF Based Approach to Token-Level Metaphor Detection.* FigLang Workshop at NAACL, 2018 [Paper]

Singh VP., **Gupta A.**, Singh S., Srivastava R. *An Efficient Content Based Image Retrieval System for Normal and Abnormal Mammograms.* IEEE UPCON'15, IIIT Allahabad [Paper]

Selected Past Projects

Machine Translation for low-resource Indian languages (IIT Kgp): An unsupervised Phrase-based machine translation system with initial phrase table induction using a bilingual lexicon and iterative back-translation. Exploiting the use of an NMT initialized with synthetic data from PB-SMT. BLEU Score of 7.0. (FairSeq, PyTorch, Moses MT)

Multi-Task learning for Sanskrit morphological tagging and lemma prediction (IIT Kgp): A deep multi-task architecture for tagging different morphological categories and lemma prediction for a free word order language like Sanskrit. Initial results suggest the superiority of such a model. (PyTorch)

Medical Scientific Text Classification using Hierarchical Neural Networks (IIT Kgp, 2018): A Hierarchical Bi-directional LSTM based system with attention for classification of PubMed abstracts along with a modification of CRF to incorporate sequence tagging information. Results superior to state-of-the-art method by 0.4 % on RCT 20k, 200k datasets (Tensorflow)

Multi-Sensor Data Fusion Using Kalman Filter (IIT BHU, 2015-2016): A robust Kalman Filter algorithm to fuse data from a low-cost IMU with GPS in order to reduce the error in estimation of object position. (MATLAB)

Achievements and Awards

- Cleared the highly prestigious **IIT-JEE (2012)**, and was placed among the top 0.5% from about half a million students
- Offered a SHE scholarship under Innovation in Science Pursuit for Inspired Research.
- District and School topper in class 12th Board examination conducted by CBSE.
- Online Courses : Machine Learning by Stanford University, Introduction to Computer Vision by Georgia Tech., Introduction to Natural Language Processing by Stanford University.

Volunteer Teaching Experience

Vindhya Gyan Public School, Mirzapur (near Varanasi) **July, 2014 - May, 2016**

- Taught and mentored students with non-English background from grade 6 to grade 12 on Saturdays, taught programming to students from grade 10 to grade 12.
- Organized various group and team-building activities on Sundays.

Skill Set

- Programming Languages: Python (PyTorch, Tensorflow, FairSeq); Java; C++; MATLAB
- Technologies and Platforms: Linux, Git, MySql, Maven, Spring; Apache Solr, Redshift, LaTeX