Meghana Moorthy Bhat (updated January 1, 2019)

Contact Information

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Research Interests

I am broadly interested in applied machine learning for text and graphical models.

Education

University of Wisconsin-Madison, Madison, WI, USA
Master of Science, Computer Science Sep 2017 - May 2019 (Expected)
(CGPA: 3.6/4.0)

Sri Jayachamarajendra College of Engineering (SJCE), Mysore, India
Bachelor of Engineering (Honours), Computer Science Sep 2008 - Jun 2012
(CGPA: 9.21/10 Rank: 5/118)

Research Experience

Graduate Researcher, UW-Madison, WI, USA
Adviser: Prof. Theodoros Rekatsinas Sep 2017 - Present

- **Error Detection and Correction using Deep Learning:** Proposed algorithms to perform error detection and correction for structured data using deep learning (DL).
  Methodology:
  - *Word embedding:* Mapped every tuple to numeric representation in multi-dimensional space.
  - *Deep Learning:* Developed DL models using GRU for training embeddings across rows and columns
  - Tested the methodology for synthetic errors in real-world datasets consisting of null values, typos and shuffled attribute values. Currently working on integration of modules to the open source project HoloClean
- **Approximate discovery of Functional Dependencies (FDs) using structure learning:** Exploring different mechanisms with fellow lab-mates to derive FDs from a noisy dataset using structure learning (by inferring the structure of probabilistic graphical model from the data).
  Methodology:
  - Mapped word to latent vector representation and used attention, logistic regression to obtain the high-level structure of potential FD candidates.
  - Developed mutual information estimator methods to obtain potential FD candidates from the previous step.
  - Tested the accuracy of results against HoloClean for different noisy datasets.

Professional Experience

Qualcomm Research, San Diego, CA, USA
Machine Learning Intern June 2018 - Aug 2018

Intel Corporation, Bangalore, India
Senior Software Engineer (Infrastructure and performance modelling) Aug 2012 - Jul 2017

Papers and conferences

1. Zhixuan Zhou, Huankang Guan, **Meghana Bhat** and Justin Hsu "Detecting Fake News with NLP: Challenges and Possible Directions." International Conference on Agents and Artificial Intelligence (ICAART) 2019 ***(To Appear).***
2. **Meghana Moorthy Bhat**, Josef Eckmueller, Melwyn Scudder. "Performance Optimization of Virtual Prototypes." DTTC Intel, Portland, Oregon, USA 2015. (DTTC is Intel global internal conference)
3. **Meghana Moorthy Bhat**, Melwyn Scudder, Kartik Shah. "Virtual Prototype (VP) Quality Improvement Methodology." DvCon India, Bangalore, India, 2015.

Teaching Experience

Department of Computer Science, UW-Madison

Grader/Reader, CS 640: Introduction to Computer Networks — Jan 2018 - May 2018

Served as Grader for a class of 120 students, with duties of grading papers, holding office hours to help students on reviewing exam papers.

Technical Skills

Scientific Computing - Python (numpy, scipy, sklearn, TensorFlow, Keras)

General-purpose Programming & Others - Java, C++, LaTeX, HTML, SQL

Coursework

UW Madison

CS 839 Data Management for Machine Learning Applications
CS 839 Topics in Security
CS 838 Data Science: Principles, Algorithms, Applications
CS 760 Machine Learning
CS 765 Data Visualization
CS 577 Introduction to Algorithms

SJCE Mysore

Databases and Management Systems
Algorithms and Data Structures
Operating Systems
Introduction to Networks

Projects

Detecting Fake News with NLP: Challenges and Possible Directions

UW-Madison (Course: Topics in Security with Prof. Justin Hsu) — Sep 2018 - Nov 2018

Designed adversarial attacks that can 'fool' classification algorithms built on fact checking using NLP algorithms.

Snapdragon Neural Processor Engine (SNPE)

Qualcomm (Adviser: Mark Charlebois) — June 2018 - Aug 2018

- Detecting 'redundant' data in model training using deep neural networks.
- Worked on enabling 8-bit CPU (Fixed point math) in SNPE for better performance in overall speed-up and lesser memory consumption for SNPE AI powered phones.

Entity Matching using Machine Learning and Deep Learning

UW-Madison (Course: Data Science, with Prof. AnHai Doan) — Feb 2018 - Apr 2018

Performed entity matching of books from raw data of Amazon and GoodReads using Magellan and DeepMatcher. Performed benchmark analysis of both the approaches to understand the respective trade-offs. Code

Speaker Detection Algorithm for Safer Home Project

UW-Madison (Adviser: Prof. Suman Banerjee) — Feb 2018 - Apr 2018

As a team member of Safer Home project, extended Paradrop to incorporate speaker detection module using hidden markov process. The project Safer Home emerged as one of the winner teams in US Ignite challenge. Link

Performance Optimization for Virtual Prototypes

Intel Corporation Jan 2013 - Jan 2014

Designed and developed a profiler system to identify potential performance bottlenecks. It is a Python tool built from the ground up. Later, added further features for performing data analysis on cache hits and misses. Received Department Recognition Award for the outstanding contribution.

Honours and Achievements

Qualcomm Hackathon Finalist - Award for Innovation, 2018.

Application development award from US Ignite for SAFER Home project.

Department Recognition Award, Intel Corporation for successful critical project completion, 2015.

Employee Recognition Award, Intel Corporation for acceptance of poster presentation in DvCon India, 2015.

Employee Recognition Award, Intel Corporation for customer satisfaction and flexibility, 2014.

Conferral of the Honours degree in CSE, SJCE Mysore, 2012 (Requires minimum of 8.5 CGPA throughout the last two years of undergraduate studies).

State Board Merit Scholarship, Karnataka Secondary Education Examination Board (KSEEB) India, for 4 years of undergraduate study covering 75% of undergraduate tuition fee, 2008-2012.

Ranked All India 780 out of 400,000 candidates in Common Entrance Test, 2008.

Extracurricular Activities

Carnatic classical vocalist - Performed over 300+ concerts across India and USA. Audio

Volunteered for Linux Club and SJCE music club during undergraduate studies to organize tech talks and events.