Prathamesh Deshpande

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REFERENCES

Sunita Sarawagi	Ph.D. Advisor	Professor, IIT Bombay	sunita@iitb.ac.in
B. Ravindran	M..S. Advisor	Professor, IIT Madras	ravi@cse.iitm.ac.in
Abir De	Collaborator	Asst. Professor, IIT Bombay	abir@cse.iitb.ac.in

RESEARCH INTERESTS

Forecasting in temporal data (Time-series and point processes)
Forecasting Anomalies/Ourliers in Multivariate Time-series
Time-series modelling (predictive analytics, missing value imputation)

EDUCATION

Ph.D., Computer Science and Engineering Jul 2017 to Present

Indian Institute of Technology Bombay, Mumbai.

- Advisor: Prof. Sunita Sarawagi

M.S. by Research, Computer Science and Engineering Jan 2014 to Jul 2017

Indian Institute of Technology Madras, Chennai.

- Thesis Topic: *A Study of Community Detection Algorithms in Large Networks*
- Advisor: Prof. B. Ravindran

B.Tech., Information Technology Jul 2009 to Jun 2013

Walchand College of Engineering, Sangli, Maharashtra.

PUBLICATIONS

- Long Range Probabilistic Forecasting in Time-Series using High Order Statistics
  Under Review.
  Prathamesh Deshapnde and Sunita Sarawagi
  [Arxiv], [Code]

- Missing Value Imputation on Multidimensional Time Series
  In *VLDB 2021.*
  Parikshit Bansal, Prathamesh Deshapnde, Sunita Sarawagi
  [Paper],

- Long Horizon Forecasting With Temporal Point Processes
  In *WSDM 2021.* (AR 18.6 %)
  Prathamesh Deshapnde, Kamlesh Marathe, Abir De, Sunita Sarawagi
  [Paper], [Code]

- Streaming Adaptation of Deep Forecasting Models using Adaptive Recurrent Units
  In *ACM SIGKDD 2019*, August 4–8, 2019, Anchorage, AK, USA. (AR 14.2%)
  Prathamesh Deshpande and Sunita Sarawagi
  [Paper], [Code]

- MCEIL: An Improved Scoring Function for Overlapping Community Detection using Seed Expansion Methods
  In *The 7th Workshop on Social Network Analysis in Applications, ASONAM 2017*, Sydney, Australia
  Prathamesh Deshpande and B. Ravindran
  [Paper]

Honors and Awards

- SIGIR Travel Grant to attend WSDM 2021, Virtual Event.
- Google Travel Grant of USD2700 to attend KDD 2019, Anchorage, AK, USA.
- Travel grant for attending ACM CoDS-COMAD 2018 conference, held in Goa, India.
- 4^{th} rank in HiPC 2015 Student Parallel Programming challenge.
- Secured All India Rank 389 in GATE 2013, with 99.83 percentile.

Professional Activities

- Reviewer, AISTATS 2022
- Reviewer, ICML 2020

Teaching Assistant

- Artificial Intelligence and Machine Learning, Autumn 2021
- Automatic Speech Recognition, Spring 2021
- Foundations of Machine Learning, Autumn 2020
- Advanced Machine Learning, Spring 2020
- Web Mining I, Autumn 2019
- Web Mining II, Spring 2019
- Introduction to Machine Learning, Autumn 2018

Graduate Courses

- At IIT Bombay
  - Organization of Web Information
  - Advanced Machine Learning
  - Automatic Speech Recognition
  - Web Search and Mining
  - Foundations of Machine Learning
- At IIT Madras (selected courses)
  - Data Mining
  - Kernel Methods for Pattern Analysis
  - Foundations of Data Science
  - Indexing and Searching in Large Data-sets

Projects

Convolutional Neural Networks for Graph-Structured Data
(Advanced Machine Learning, Guide: Prof. Sunita Sarawagi) Feb 2018 to Apr 2018

- Comparison of various convolution approaches on Merck Molecular Activity Challenge dataset.
- Explored various techniques to define the neighbourhood of a node for convolution on the graph-structure.

Emotion Recognition from Multi-modal Information
(Automatic Speech Recognition, Guide: Dr. Preethi Jyothi) Aug 2017 to Nov 2017

- Explored BLSTM-RNNs for the task of Emotion Recognition on RECOLA dataset.
- There is a delay between emotion occurring and it being labeled.
- We showed that simple BLSTM-RNN does not learn the delay automatically, and it needs to be explicitly handled.

A Study of Community Detection Algorithms in Large Networks
(M.S. Thesis, Guide: Prof. B. Ravindran) Jan 2016 to Jun 2017

- Proposed an improved scoring function to detect overlapping communities in large networks.
- The proposed scoring function computes communities with higher mutual information and F_1 score than conductance on benchmark networks Amazon, DBLP and Youtube.
- Published in SNAA Workshop, ASONAM-2017 conference.

Singular Value Decomposition of Large Sparse Matrices Apr 2015 to Dec 2015

- Implementation of Incremental SVD algorithm in *gensim*, a python library for text processing.
- Input matrix is processed in streaming fashion. Input rows or columns can be processed as they arrive from source of the data.

- For sufficiently large matrices which can only be processed in streaming fashion, the accuracy of top 10-20% singular values is unaffected.

Diversity aware reverse top-k queries on graphs
(Indexing and Searching in Large Data sets, Guide: Dr. Sayan Ranu) Aug to Nov 2014

- A technique is proposed to introduce diversity in the result of a reverse top-k query.
- First, a reverse top-k' set S is extracted, where $k' > k$. Then, clustering is performed on S to get diversified result.

Software Skills

- Python (PyTorch, TensorFlow, CVXPY)
- C, C++.
- Platform: Amazon Web Services (AWS).
- Tools: LaTeX.

Professional Experience

Project Associate — Jan 2014 to Dec 2016
- Indian Institute of Technology, Madras.

Software Engineer — Oct 2013 to Dec 2013
- Persistent Systems Ltd., Pune.

Positions of Responsibilities

- MS/PhD Placement Coordinator for Computer Science and Engg. at IIT Madras.
- Technical Adviser for Students' Association of Information Technology in Walchand College of Engineering, Sangli.
- Member of Walchand Linux Users' Group from June' 2011 to April' 2012, in Walchand College of Engineering, Sangli.