Yeshwanth Cherapanamjeri

Ph.D Applicant in Machine Learning

Contact Information

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Research Interests Learning Theory, Optimization, High Dimensional Statistics

Current Position

Microsoft Research India (June 2015 - Present)
Research Fellow Advisors: Dr. Prateek Jain and Dr. Praneeth Netrapalli

Education

Indian Institute of Technology Bombay (July 2011 - May 2015)
B. Tech with Honors in Computer Science and Engineering
Minor in Applied Statistics and Informatics
CGPA: 9.31 (*Ranked among the top 10% of the department*)

Publications

Nearly Optimal Robust Matrix Completion
Yeshwanth Cherapanamjeri, Kartik Gupta, Prateek Jain
Under Submission to the Twentieth International Conference on Artificial Intelligence and Statistics
ArXiv Version: https://arxiv.org/abs/1606.07315

Research Experience

Robust Matrix Completion (June 2015 - May 2016)
Advisor: Dr. Prateek Jain, Microsoft Research India

- Formulated Robust Matrix Completion as the problem of recovering a sparsely-corrupted low rank matrix by observing a small number of entries from the matrix
- Proposed an efficient algorithm based on singular value projection and hard thresholding
- Established the *information-theoretic optimality* of the algorithm in the fraction of corruptions
- Established the near-*optimality* of sample and run-time complexities
- Empirically evaluated the algorithm on real-world foreground-background separation task where we obtained 10× speedup over existing methods

Non Convex Outlier-Robust PCA (June 2016 - Present)
Advisors: Dr. Prateek Jain and Dr. Praneeth Netrapalli, Microsoft Research India

- Proposed first provably near-*linear* time algorithm for Outlier-Robust PCA
- Proved the *information-theoretic optimality* of the algorithm in the fraction of outliers tolerated
- Emprically evaluated the proposed algorithm on a variety of anomaly detection datasets

We are currently exploring efficient streaming variants of our algorithm for deployment on low resource devices. We are preparing our results for a publication.

Entity Linking with Hierarchical Non-Parametric Topic Models (May 2014 - May 2015)
Advisors: Prof. Ganesh Ramakrishnan and Prof. Soumen Chakrabarti, IIT Bombay

- Worked on the use of hierarchical non-parametric topic models for entity linking
- Proposed a novel extension of existing methods to alleviate the issue of No Attachment phrases
- Proposed optimizations to existing Gibbs sampling techniques to scale to large corpora like Wikipedia
- Evaluated the proposed algorithm on corpora constructed from Wikipedia and Yago!

The report can be found here: https://yeshwanth94.github.io/docs/elReport.pdf.

Contour and Junction Detection in Architectural Images (May 2013 - July 2013)
Advisor: Prof. Marcus Magnor, TU Braunschweig

- Implemented and evaluated the *gPB* algorithm for detecting contours on natural images
- Proposed domain specific extensions to *gPB* to extract junction points based on extracted contours
- Integrated into a user-guided tool to reconstruct the façade of a building from multiple images

Scholastic Achievements

Secured **All India Rank 67** in **IIT-JEE** amongst more than 500,000 candidates (2011)

Declared successful at the **Indian National Mathematical Olympiad (INMO)** (2011, 2010)

Awarded **Kishore Vaigyanik Protsahan Yojana Scholarship** with All India Rank 13 (2011)

Among the top 1% students in India in the Indian National Chemistry *and* Physics Olympiads (2011)

Qualified for the regional rounds of the ACM ICPC (2013, 2014)

Talks & Seminars

Entity Linking with Hierarchical Non-Parametric Topic Models (Mar 2015)
Advisor: Prof. Ganesh Ramakrishnan, Microsoft Research India & IIT Bombay

Stability and Generalization in Machine Learning (Sep 2014)
Advisor: Prof. Saketha Nath J., IIT Bombay

Hopfield Networks and Applications (Mar 2014)
Advisor: Prof. Pushpak Bhattacharya, IIT Bombay

Contour and Junction Detection in Architectural Images (July 2013)
Advisor: Prof. Marcus Magnor, TU Braunschweig

Professional Service

External Reviewer: Thirty-First AAAI Conference on Artificial Intelligence

Teaching Assistant for MA 214 - Numerical Analysis: Mentored a group of 30 students part of an introductory course on the analysis of commonly used numerical algorithms in scientific computing