Deepak Maurya

Personal Data

Research Interests: Theoretical Machine Learning
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Education

2021 - Present **Purdue University**, PhD in Computer Science, GPA: 4/4
Advisor: Prof. Jean Honorio

2018 - 2021 **Indian Institute of Technology** Madras, MS (Research) in Computer Science
Thesis: Spectral Hypergraph Theory
Advisors: Prof. Balaraman Ravindran, Prof. Shankar Narasimhan

2011-2016 **Indian Institute of Technology** Madras, M.Tech & B.Tech in Electrical Engineering
Thesis: Identification of Linear Dynamic Systems using Dynamic Iterative PCA
Advisors: Prof. Arun K. Tangirala, Prof. Shankar Narasimhan

Publications

3.1 Manuscript Under Preparation/Submission

1. A Novel Plug-and-Play Approach for Adversarially Robust Generalization, **Deepak Maurya**, Adarsh Barik, Jean Honorio, [arXiv link].
2. A Theoretical Study of The Effects of Adversarial Attacks on Sparse Regression, **Deepak Maurya**, Jean Honorio, [arXiv link].
3. Hypergraph Partitioning using Tensor Eigenvalue Decomposition, **Deepak Maurya**, Balaraman Ravindran, [arXiv link].
4. An Efficient Certification of Graph Isomorphism on Selected Graph Classes, **Deepak Maurya**, Balaraman Ravindran, Srinivasan Parthasarathy

3.2 Accepted

1. Identification of Errors-in-Variables ARX Models Using Modified Dynamic Iterative PCA, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan, Journal of the Franklin Institute, 2022; 359(13):7069-90 [Paper].
2. Dynamic Iterative Principal Components Analysis for Closed-loop, Model Identification, FAC-PapersOnLine, 55(1):393-8, Richa Katare, **Deepak Maurya**, Ravindra D Gudi, ACODS 2022, [Paper].
3. Hyperedge Prediction using Tensor Eigenvalue Decomposition, **Deepak Maurya**, Balaraman Ravindran, Journal of the Indian Institute of Science, 101(3):443-53, [Paper].
4. ARX Model Identification using Generalized Spectral Decomposition, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan, To appear in 24th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2020), [Paper].
5. Optimal Filtering and Residual Analysis in Errors-in-variables Model Identification, Vipul Mann, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan. Industrial & Engineering Chemistry Research. 2020;59(5):1953-65. [Paper], [Code].
6. Identification of MISO Systems in Minimal Realization Form, Chaithanya K. Donda, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan, IFAC-PapersOnLine, 53(1), pp.141-146, [Paper], [Slides].
7. Identification of Output-Error (OE) Models using Generalized Spectral Decomposition, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan, In Fifth Indian Control Conference (ICC 2019) (pp. 28-33), IEEE. Won the Best Student Paper Award. [Paper], [Code], [Slides].
8. Identification of Errors-in-Variables Models Using Dynamic Iterative Principal Component Analysis, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan, Industrial & Engineering Chemistry Research. 2018;57(35):11939-54. [Paper], [Code].

9. Identification of Linear Dynamic Systems using Dynamic Iterative Principal Component Analysis, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan, IFAC-PapersOnLine, 49(7), pp.1014-1019. [Paper], [Code], [Slides].

Awards

- Best Student Paper at Indian Control Conference 2019
- Travel grant of $500 and student registration of $490 to attend KDD 2019
- Travel grant to attend CoDS-COMAD 2020 and ICC 2019, covering all expenses

Relevant Coursework

- Hands on Learning Theory
- Randomized Algorithms
- Linear Algebra and Random Processes
- Probability, Statistics and Stochastic Process
- Nonlinear optimisation: Theory and algorithms
- Multivariate Data Analysis
- Applied Time Series Analysis
- System Identification
- Introduction to Machine Learning
- Probabilistic Graphical Models

Service

- Teaching assistant for CS 578: Statistical Machine Learning during Spring 2022 and for CS 314: Numerical Methods during Fall 2021 and Fall 2022 at Purdue University.
- Teaching assistant for a MOOC course on Introduction to ML offered on NPTEL during July-Oct 2019, Jan-Apr 2020, and July-Dec 2020 enrolled by 20K, 30K, and 40K students respectively.
- Teaching assistant for course on Introduction to Research offered at IIT Madras during Jan-May 2019 semester.
- Co-organizer for Graphs & more Complex structures for Learning & Reasoning (GCLR) workshop held at AAAI 2021 and AAAI 2022.
- Volunteer for AAAI 2021, AISTATS 2021, and CoDs-COMAD 2021.
- Reviewer for ECML-PKDD 2020, ACODS 2018, 2020, ADCOM 2018, ICC 2019.

Scholastic Achievements

- All India Rank in **top 0.64%** in AIEEE 2011 attempted by **1.12M** candidates.
- All India Rank in **top 0.92%** in IIT-JEE 2011 attempted by **485K** candidates.
- All India Rank 451 in **top 0.36%** in GATE 2015 attempted by **126K** candidates.