Deepak Maurya

Personal Data

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CURRENTLY: MS Scholar IIT Madras

Education

2018 - Present	**Indian Institute of Technology**, Madras, Chennai, India MS - Computer Science CGPA: 8.2 out of 10 (India) Thesis: Learning on Hypergraphs Advisors: Prof. Balaraman Ravindran, Prof. Shankar Narasimhan
2011 - 2016	**Indian Institute of Technology**, Madras, Chennai, India M.Tech & B.Tech - Dual Degree in ELECTRICAL ENGINEERING CGPA: 7.72 out of 10 (India) Minor: Systems Engineering Thesis: Identification of Linear Dynamic Systems using Dynamic Iterative PCA Advisors: Prof. Arun K. Tangirala, Prof. Shankar Narasimhan

Publications

3.1 Accepted

1. Optimal Filtering and Residual Analysis in Errors-in-variables Model Identification, Vipul Mann, **Deepak Maurya**, Arun K. Tangirala, S. Narasimhan. Industrial & Engineering Chemistry Research. 2020;59(5):1953-65. [Paper]

2. Identification of MISO Systems in Minimal Realization Form, Chaithanya K. Donda, **Deepak Maurya**, AK. Tangirala, Shankar Narasimhan, To appear in Sixth Automatic Control and Dynamical Optimization Society (ACDOS 2020), IFAC

3. Hypergraph Partitioning using Tensor Eigenvalue Decomposition, **Deepak Maurya**, Balaraman Ravindran, Shankar Narasimhan, Accepted for a poster presentation in Sets and Partitions workshop in NeurIPS 2019

4. Hyperedge Prediction using Tensor Eigenvalue Decomposition, **Deepak Maurya**, Balaraman Ravindran, Shankar Narasimhan, Accepted for a poster presentation in Tensor Methods for Emerging Data Science Challenges (TMEDSC) workshop in KDD 2019

5. Identification of Output-Error (OE) Models using Generalized Spectral Decomposition, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan, In 2019 Fifth Indian Control Conference (ICC) (pp. 28-33), IEEE. Won the Best Student Paper Award. [Paper]

6. 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]

7. Identification of Linear Dynamic Systems using Dynamic Iterative Principal Component Analysis, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan, IFAC-PapersOnLine, Volume 49, Issue 7, 2016, Pages 1014-1019, ISSN 2405-8963. [Paper]

3.2 Under Review

1. Deepak Maurya, Sivadurgaprasad chinta, Abhishek Sivaram, Raghunathan Rengaswamy, Learning from Partial Knowledge – PCA as an Exemplar

2. Deepak Maurya, AK. Tangirala, S. Narasimhan, ARX Model Identification using Generalized Spectral Decomposition [MTNS 2020]

SCHOLASTIC ACHIEVEMENTS

- All India Rank in **top 0.64%** in AIEEE 2011 attempted by **11.18 lakh** candidates.
- All India Rank in **top 0.92%** in IIT-JEE 2011 attempted by **4.85 lakh** candidates.
- All India Rank 451 - in **top 0.36%** in GATE 2015 attempted by **1.26 lakh** candidates.

AWARDS

- Awarded travel grant to attend CoDS-COMAD 2020
- Awarded travel grant to attend KDD 2019
- Won Best Student Paper Award at ICC 2019
- Awarded travel grant to attend ICC 2019

RESEARCH PROJECTS

MS SCHOLAR Jan 2018 to Present	Networks Group, IIT Madras
	Guide : Prof. Balaraman Ravindran, Prof. Shankar Narasimhan
	1. Utilizing the tensors based representation for hypergraph
	2. Proposing a novel framework for hypergraph partitioning using tensor eigenvalue decomposition.

M.TECH THESIS June 2015 to May 2016	Identification of Linear Dynamic Systems using Dynamic Iterative PCA
	Guide : Prof. Arun K. Tangirala, Prof. Shankar Narasimhan
	The work is concerned with identifying models from data that have errors in both outputs and inputs, popularly known as errors-in-variables (EIV) problem. We developed a novel and systematic approach to the identification of linear dynamic models for the EIV case in the principal component analysis (PCA) framework which provides unbiased model with minimal user intervention. The work is published and can be found here

REVIEWER

1. Reviewer for Indian Control Conference ICC 2019

2. Reviewer for Advanced Computing and Communications Society ADCOM 2018

3. Reviewer for Advances in Control & Optimization of Dynamical Systems - ACODS 2018, ACODS 2020.

TEACHING EXPERIENCE

1. TA for a MOOC course on Introduction to Machine Learning offered on NPTEL during July-Nov 2019 and Jan-May 2020.

2. TA for Introduction to Research: CS6021 during Jan-May 2019.

3. TA for Pattern Recognition and Machine Learning: CS5691 during June - Nov 2018.

4. TA for Electrical Machines Lab: EE3702 during June 2015 to May 2016.

Industrial Experience

Data Scientist July to Nov 2016	**Mad Street Den**, Chennai, Mentor: Dr. Aravindakshan Babu Key Performance Indicators - Predictiors and Optimizers 1. Prediction of multiple key performance indicators (KPIs) for any ecommerce website. Implementation in process for reinforcing trending widget and recommender systems. 2. Designed and implemented sliding window cross validation in R. We used data table package in R which is very efficient for crunching of big data. 3. Feature engineering : Used fisher test, chi-squared test and bonferroni correction for feature selection. Stepwise logistic regression was also implemented. 4. Implemented kalman filter, seasonal ARIMA models for forecasting of time series. 5. Classification of imbalanced classes using SMOTE in R was implemented.
Summer Intern June - July 2014	Caterpillar, Chennai, Mentor: Mr. Satish Kumar Indraganti Circuit Designing Performed a comparative study on different generator set controllers and developed a design guide for upgrading circuits. Designed circuits with reduced number of safety components and studied paralleling of generator sets.