Deepak Maurya

Personal Data

Place and Date of Birth:	Jabalpur, India | 28 November 1992
Phone:	+91 9962293945
email:	dk.cs.iitm@gmail.com
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, Shankar 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**, Arun K. 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**, B. Ravindran, S. Narasimhan, Accepted for a poster presentation in Sets and Partitions workshop in NeurIPS 2019
4. Hyperedge Prediction using Tensor Eigenvalue Decomposition, **Deepak Maurya**, B. Ravindran, S. 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**, AK. Tangirala, S. 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**, AK. Tangirala, S. 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**, AK. Tangirala, S. 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.

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

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.

Reviewer

1. Reviewer for Advanced Computing and Communications Society ADCOM 2018
2. Reviewer for Advances in Control & Optimization of Dynamical Systems - ACODS 2018.

Conferences

ICC 2019 — Indian Control Conference, 2019, IIT Delhi
Awarded Best Student Paper Award for presenting the paper Identification of Output-Error (OE) Models using Generalized Spectral Decomposition

Data Science Conference — Fifth Elephant 2016, Banglore
Attended talks on data driven products from various industrial sectors like e-commerce, agriculture, finance. Gained an exposure to industrial research and product launch.

Teaching Experience

1. Teaching Assistant for Introduction to Research : CS6021 during Jan-May 2019.
2. TA for Pattern Recognition and Machine Learning : CS5691 during June - Nov 2018.
3. TA for Electrical Machines Lab : EE3702 during June 2015 to May 2016.

Participations

ZS Young Data Scientist Challenge 2015 — Organised by : ZS Associates
Analyzing consumer behaviour
Ranked 39 in a panIIT competition. Problem statement was to model potential customers of a company and predict whether they would buy from the company

Code.fun.do Jan 2014 — Organised by : Microsoft
Windows App Designing
Designed a windows phone app to acquire the information regarding quality of the content, reviews of the movie.

Presentation

- Poster Presentation on Learning from Partial Knowledge - PCA as an Exemplar in Robert Bosch Centre for Data Science and Artificial Intelligence (RBC - DSAI) 2018, IIT Madras.
- Poster Presentation on Identification of OE models using generalized spectral decomposition in 67^{th} Canadian Chemical Engineering Conference - CSCHE 2017.
- Poster Presentation on A generalized segmentation framework for oscillation detection along with their frequencies and locations in RBC - DSAI 2017.
- Poster presentation on Linear Dynamic Model Identication using Dynamic Iterative Principal Component Analysis (DIPCA) in a research symposium in Interdisciplinary Laboratory for Data Sciences, IIT Madras - November 2016.