

# Deepak MAURYA

## PERSONAL DATA

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WEB PAGE: <https://d-maurya.github.io>  
CURRENTLY: MS Scholar [IIT Madras](#)  
GOOGLE SCHOLAR: [Link](#)

## EDUCATION

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- 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](#)

## SCHOLASTIC ACHIEVEMENTS

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- 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

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- 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](#)

## PUBLICATIONS

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### 5.1 Accepted

1. ARX Model Identification using Generalized Spectral Decomposition, **Deepak Maurya**, Arun K. Tangirala, S. Narasimhan, To appear in 24th International Symposium on Mathematical Theory of Networks and Systems ([MTNS 2020](#)), [\[arXiv link\]](#)
2. 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. [\[Paper\]](#), [\[Code\]](#)
3. 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, [\[Paper\]](#)

4. 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](#). [Poster], [arXiv link]
5. 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](#). [Slides]
6. 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], [Slides]
7. 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]
8. 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], [Code], [Slides]

## 5.2 Manuscript Under Preparation / Submission

1. Degree-corrected SBM for Hypergraphs, **Deepak Maurya**, Balaraman Ravindran
2. Practical Graph Isomorphism using Eigenvectors, **Deepak Maurya**, Balaraman Ravindran, Srinivasan Parthasarathy
3. HEAL: Embedding Multi-layer Hypergraphs. Naganand Yadati, Tarun Kumar, **Deepak Maurya**, Partha Talukdar, Balaraman Ravindran
4. Identification of Errors-in-Variables ARX Models Using Modified Dynamic Iterative PCA, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan
5. Identification of OE models using QZ decomposition, **Deepak Maurya**, Arun K. Tangirala, Shankar Narasimhan
6. Least squares methods in a Nutshell, **Deepak Maurya**, Shankar Narasimhan
7. Incorporating prior knowledge about structural constraints in model identification, **Deepak Maurya**, Sivadurgaprasad chinta, Abhishek Sivaram, Raghunathan Rengaswamy, [arXiv link]

## RESEARCH PROJECTS

MS THESIS Jan 2018 to Present	<p>Spectral Hypergraph Theory</p> <p>Guide : <a href="#">Prof. Balaraman Ravindran</a>, <a href="#">Prof. Shankar Narasimhan</a></p> <p>Utilizing the Laplacian spectrum of hypergraphs represented using tensors for various learning tasks such as hypergraph partitioning, hyperedge prediction, and graph isomorphism. The preliminary version of first two works are accepted in workshops held at <a href="#">NeurIPS 2019</a>, <a href="#">KDD 2019</a> and the extended version is under review.</p>
M.TECH THESIS June 2015 to May 2016	<p>Identification of Linear Dynamic Systems using Dynamic Iterative PCA</p> <p>Guide : <a href="#">Prof. Arun K. Tangirala</a>, <a href="#">Prof. Shankar Narasimhan</a></p> <p>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 <a href="#">here</a>.</p>

## SERVICE

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- Co-organizer for [Graphs & more Complex structures for Learning & Reasoning \(GCLR\)](#) workshop held at [AAAI 2021](#).
- Reviewer for [ECML-PKDD 2020](#), [ACODS 2018, 2020](#), [ADCOM 2018](#), [ICC 2019](#).
- Teaching assistant for a MOOC course on Introduction to Machine Learning offered on [NPTEL](#) during July-Nov 2019 and Jan-May 2020.