Devanshu Arya — Curriculum Vitae

General Information

Age: 27
Nationality: Indian

Phone: +31-687368840
Email: d.arya@uva.nl

Research Interests

Representation Learning, Geometric Deep Learning on Hypergraphs and Multimedia Analytics for Forensics

Education

University of Amsterdam — Jan '17 - Present
PhD. Geometric Deep Learning on Hypergraphs
Advisor: Prof. Marcel Worring
Working on representation learning on graph-structured data, in particular multimodal learning using hypergraphs. Developing graph based deep learning models that are scalable to datasets with many modalities, with applications in recommedner systems, link predictions and neuroimaging.

Indian Institute of Technology Kanpur — Jul '10 - Jul '15
Dual Degree (B.Tech + M.Tech) in Electrical Engineering
Specialization: Speech Signal Processing
M.Tech. GPA - 9.2/10
B.Tech. GPA - 7.4/10

Publications

Devanshu Arya et al. "Fusing Structural and Functional MRIs using Graph Convolutional Networks for Autism Classification". Proceedings of the 3rd International Conference on Medical Imaging with Deep Learning. **MIDL**, **2020**.

Devanshu Arya, Stevan Rudinac, and Marcel Worring. "HyperLearn: A Distributed Approach for Representation Learning in Datasets With Many Modalities." Proceedings of the 27th ACM International Conference on Multimedia. **ACM MM**, **2019** - Oral

Dirk Streeb, Devanshu Arya, Daniel Keim, and Marcel Worring. "Visual Analytics Framework for the Assessment of Temporal Hypergraph Prediction Models". In Set Visual Analytics Workshop at **IEEE VIS 2019**.

Devanshu Arya, Stevan Rudinac, and Marcel Worring. "Predicting behavioural patterns in discussion forums using deep learning on hypergraphs." 2019 International Conference on Content-Based Multimedia Indexing. **IEEE CBMI**, **2019** - Oral

Arya, Devanshu, and Marcel Worring. "Exploiting Relational Information in Social Networks using Geometric Deep Learning on Hypergraphs." Proceedings of International Conference on Multimedia Retrieval. **ACM ICMR**, **2018**. - Oral

Arya, Devanshu, Anant Raj, and Rajesh M. Hegde. "Significance of variable height-bandwidth group delay filters in the spectral reconstruction of speech." **INTERSPEECH**. **2013**.

Full publication list available on: https://scholar.google.com/citations?user=p0AVlzYAAAAJhl=en

Experience

ASGARD - Analysis System for Gathered Raw Data — Jan'17 - Present
Project: Forensics Data Analysis for Law Enforcement Agencies (LEAs) across EU

- Develop AI powered solutions for forensic investigations that can directly contribute towards the Law Enforcement Agencies (LEAs) technological autonomy across EU.
- Develop, maintain and evolve a best-of-class tool set for the extraction, fusion, exchange and analysis of Big Data, including cyber-offense data for forensic investigation.

Opera Solutions (Big Data Analytics Firm), *New Jersey/India* — Jul'15 - Nov''13
Project: Accelerated Risk Management System for Audit Engagements

- Built a risk measurement system to assess engagements for professional services company
- Developed an NLP model to classify specific sentences in official engagements from over 40,000 documents

Internships

Nanyang Technological University (NTU), *Singapore* May'14 'Jul'14
Project: Deep Neural Networks Based Voice Activity Detection (VAD)
Research Project Mentored by Prof. Chng Eng Siong (School of Computer Science)

- Used Deep Neural Networks to build a semi-supervised VAD system which can detect speech part of signal under non-stationary noise scenarios at an SNR level as low as -5dB

Phillips Research, Bangalore, India May'13- Jul'13
Project: Predicting the Needle Guidance Path for 3D Ultrasound Medical Image Analysis
Research Intern in Ultrasound Division of Healthcare Department

- Devised a 3D path planning algorithm to improve needle visualization tools for cancer by predicting trajectories during biopsy procedurals
- Implemented Rapidly-Exploring Random Tree algorithm to calculate path of least resistance and minimal damage to sensitive organs, findings recommended to be fused with Philips PercuNav System, a real time 3D Ultrasound machine

Advanced Courses

Artificial Intelligence: Computer Vision by Learning, Mathematics for Machine Learning, Natural Language Processing, Introduction to Robotics

Signal Processing: Convex Optimization in SP/COM, Speech Signal Processing, Image Processing

Technical Skills

- Programming Languages: Python, C, Java, R, SAS
- Deep Learning Libraries: Pytorch, Tensorflow, neo4j

Teaching Assistant

- Information Visualization (Master's in Artificial Intelligence) - University of Amsterdam
- Fundamentals of Data Science (Master's in Data Science) - University of Amsterdam
- Speech Signal Processing (Master's in Electrical Engineering) - IIT Kanpur

Student Supervision

- Bryan Cardenas (jointly with Deepak Gupta) University of Amsterdam
  Generating Diverse High-Fidelity Images containing Multiple Objects
- Richard Olij (jointly with Rajat Thomas) University of Amsterdam
  Graph Convolutional Network for patient classification using Neuroimaging