

## EDUCATION

### PHD IN CS, MCGILL UNIVERSITY | 2019

Research Advisor: William Hamilton

### MS BY RESEARCH IN CSE, INDIAN INSTITUTE OF TECHNOLOGY MADRAS | 2015 - 2018

Research Advisor: Balaraman Ravindran

### BE IN CSE, ANNA UNIVERSITY CHENNAI | 2009 - 2013

## EXPERIENCE

### ROBERT BOSCH CENTRE FOR DATA SCIENCE AND AI, DEPT. OF C.S.E, IIT MADRAS

Project Officer: Feb'19 - June'19 & Project associate: Aug'17 - Jan'19 | Supervisor: Prof. Balaraman Ravindran

Project: Network Representation Learning | An IITM-Intel Collaboration

- Built a Network Representation Learning toolkit for both attributed and non-attributed graphs.
- Studied effective ways of incorporating linguistic structural priors for dialogue systems.
- Worked on a reinforcement learning agent that learns transferable network structure based policies for social network discovery in an unknown network.

### R.I.S.E LAB, DEPT. OF C.S.E, IIT MADRAS

Project Associate: July'14 - Aug'17 | Supervisor: Balaraman Ravindran

Project: Wafer data inspection | An IITM-KLA Tencor Collaboration

- Worked on extreme binary and multiple classes class imbalance classification problems to detect defects in wafers.
- Proposed models that handled class imbalance by leveraging semi-supervised, multi-view and active learning setups.
- Designed CNNs and shared representation learning architectures for multi-modal defect classification.

### ERICSSON RESEARCH

Research Intern: June'13 - June'14 | Supervisor: Shivashankar Subramanian

- Worked on learning from heterogeneous data sources and build alarm prediction models for Telecom data.
- Proposed a Co-Training based framework for multi-label learning in multi-relational networks with multiple attributes.

### GLOBAL OPERATIONS TEAM | PAYPAL

Intern: Dec'11 | Supervisor: Ms. Bhaduri Raju Naidu

- Developed a web application tool with J2EE and MYSQL for Resource mapping and Reporting

## PATENTS

### USER CATEGORIZATION IN COMMUNICATIONS NETWORKS | UNITED STATES 20150236910

Work done during internship at Ericsson R&D | Collaborator: Shivashankar Subramanian

## PUBLICATIONS AND PRE-PRINTS

### NETWORK REPRESENTATION LEARNING: CONSOLIDATION AND RENEWED BEARING

ARXIV:1905.00987 (UNDER REVIEW IN A CONFERENCE)

Saket Gururkar\*, Priyesh Vijayan\*, Aakash Srinivasan\*, Goonmeet Bajaj, Chen Cai, Moniba Keymanesh, Saravana Kumar, Pranav Maneriker, Anasua Mitra, Vedang Patel, Balaraman Ravindran & Srinivasan Parthasarathy

### HOPF: HIGHER ORDER PROPAGATION FRAMEWORK FOR DEEP COLLECTIVE CLASSIFICATION

EIGHTH STARAI WORKSHOP, IJCAI 2018 | ARXIV:1805.12421

Priyesh Vijayan, Yash Chandak, Mitesh Khapra, Srinivasan Parthasarathy & Balaraman Ravindran

### F-GCN: FUSION GRAPH CONVOLUTIONAL NETWORKS

FOURTEENTH MLG WORKSHOP, KDD 2018 | ARXIV:1805.12528

Priyesh Vijayan, Yash Chandak, Mitesh Khapra, Srinivasan Parthasarathy & Balaraman Ravindran

### SEMI-SUPERVISED LEARNING FOR CLUSTERABLE GRAPH EMBEDDINGS WITH NMF

RELATIONAL REPRESENTATION LEARNING WORKSHOP, NIPS 2018 |

Priyesh Vijayan\*, Anasua Mitra\*, Srinivasan Parthasarathy & Balaraman Ravindran

### MULTI-LABEL COLLECTIVE CLASSIFICATION IN MULTI-ATTRIBUTE MULTI-RELATIONAL NETWORK DATA | IEEE/ACM ASONAM 2014

## **GRID SCHEDULING USING IMPROVED PARTICLE SWARM OPTIMIZATION WITH DIGITAL PHEROMONES | IJSER 2012 PROCEEDINGS**

A P Sarath Chandar, Priyesh Vijayan & Doreen Robin

## **AWARDS**

**PANICKER AWARD** | 2011-2012 | INSTITUTE LEVEL

This award is given to the best over-all pre-final year undergraduate student.

## **PROGRAMMING**

### **LANGUAGES**

Expert: Python, MATLAB

Intermediate: C++ • Java • C

### **LIBRARIES**

TensorFlow

## **RECENT COURSES: 2015-2018**

**CS5011: INTRODUCTION TO MACHINE LEARNING | CS6310: ARTIFICIAL NEURAL NETWORKS | CS7015: DEEP LEARNING | CS6012: SOCIAL NETWORK ANALYSIS | CS6720: DATA MINING | CH5440: MULTIVARIATE DATA ANALYSIS**

## **TALKS, CONFERENCES & SUMMER SCHOOLS**

**INVITED TALKS** 'TRANSITION FROM MACHINE LEARNING -> DEEP LEARNING' (MLDLTISP'18), S.V.C.E | 2018

3<sup>RD</sup> RBCDSAI WORKSHOP ON RECENT PROGRESS IN DATA SCIENCE AND AI | 2018

'THINK LIKE A STARTUP SERIES', IITM INCUBATION CELL | 2016

**ORAL PRESENTATION** INTERNATIONAL CONFERENCE ON EMERGING TRENDS, ICET | 2012

**POSTER PRESENTATIONS** EIGHTH STATISTICAL RELATIONAL LEARNING WORKSHOP, IJCAI 2018

RBC-DSAI WORKSHOP ON RECENT PROGRESS IN DATA SCIENCE & AI, IITM | 2017

**MICROSOFT SUMMER SCHOOL ON MACHINE LEARNING, IISC** | 2015

**DEEP LEARNING SUMMER SCHOOL, IIIT-H** | 2016

## **EXTRA CURRICULAR**

**PROGRAM COMMITTEE MEMBER** | ADCOM'18, CoDs-COMAD'18

**REVIEWER** | ACL'18

**SUB-REVIEWER** | AAAI'17, CODS'17 & DSAA'15

**SEMI-FINALIST** | IITB EUREKA'S B-PLAN COMPETITION, TOP 25/6K+ TEAM | 2013 | NATIONAL LEVEL

**FIRST RUNNER UP** | IBM THE GREAT MIND TECH QUIZ | 2011 | REGIONAL

**WINNER** | MY IDEA PROGRAM INSTITUTE LEVEL | 2011 | INSTITUTE LEVEL

**NATIONAL SOCIAL SERVICE (NSS) AND ROTORACT MEMBER** | 2009-2013

Actively participated in social welfare activities for the betterment of the rural area in Kanchipuram district

## **TEACHING**

**ACM INDIA SUMMER SCHOOL ON DATA SCIENCE** | JUNE 2018 | NATIONAL LEVEL

TA for 5 lab sessions on Machine learning

**COMMUNICATION SKILLS MENTOR** | 2010-2012 | INSTITUTE LEVEL

Designed and conducted interactive English improvement sessions for students from rural background

**C-TRAINING TUTOR** | 2011-2012 | INSTITUTE LEVEL

Taught C Programming for M.C.A and junior B.E students

## **OFFICES HELD**

**CHAIRPERSON** | SVCE-ACM STUDENT CHAPTER | 2012-2013

**GENERAL SECRETARY** | ASSOCIATION OF COMPUTER ENGINEERS (ACE) | 2011-2012

**RESEARCH COMMITTEE HEAD** | SVCE-ACM | 2011-2012

**LIBRARY COMMITTEE REPRESENTATIVE** | 2011-2012

**EXECUTIVE MEMBER** | ACE | 2010-2011

**CLASS COMMITTEE MEMBER** | 2010-2011

**CLASS REPRESENTATIVE** | 2009-2010

**BOYS HOSTEL REPRESENTATIVE** | 2009-2010

## EVENTS ORGANIZED

### **STUDENT CO-COORDINATOR | NATIONAL LEVEL PROGRAMMING CONTEST, NLPC | 2012**

First of its kind from our college which saw a participation of 491 students.

### **ORGANIZER | ASIA LEVEL PROGRAMMING CONTEST, NLPC | 2012**

It was an online contest, where other student chapters from Asian countries participated

### **COORDINATOR | INTERRUPT, CS DEPT SYMPOSIUM | 2012**

Well organized with interesting set of events which attracted 4 times more crowd than that of the previous year

### **ORGANIZED LECTURES: | 2009-2012**

Membrane computing workshop, various guest lectures on Web 2.0, TCS, FGPA, Android, .etc

### **ORGANIZED C-TRAINING CLASSES FOR CS AND M.C.A DEPT. | 2012**

## CERTIFICATIONS & TESTS

**TOEFL: TEST OF ENGLISH AS A FOREIGN LANGUAGE | 106/120**

**GATE: GRADUATE APTITUDE TEST IN ENGINEERING | 97.433 PERCENTILE**

**COURSERA: ANDREW NG'S MACHINE LEARNING COURSE [100%] | 2013**

**IBM CERTIFIED DATABASE ASSOCIATE, DB2 9 FUNDAMENTALS [85% - #1 IN COLLEGE] | 2011**

**IBM CERTIFIED DEPLOYMENT PROFESSIONAL, TIVOLI DIRECTORY SERVER V6.3 [90%] | 2012**

**COGNIZANT CERTIFIED STUDENT | 2012**

## SELECTED RESEARCH PROJECTS

### **IS LARGER (MULTI-HOP) NEIGHBORHOOD INFORMATION USEFUL ? | JAN-MAY'15**

- Existing works for relational learning typically dismissed the use of higher-order neighborhood information
- Showed that higher-order information such as nodes' structural roles and community information were useful in achieving improved performance for protein function prediction.

### **HOW TO REDUCE THE HYPERPARAMETERS FOR GRAPH EMBEDDING MODELS ? | DEC'16-FEB'17**

- Existing Random walk (RW) based methods require numerous hyperparameters to learn node embeddings.
- Proposed a Graph Language Model (GLM) with RNNs that learned to predict the shortest path between nodes.
- Embeddings learned with GLM incorporated depth information and avoided hyper-params required for biasing the RW. The proposed method fared similar to or better than existing models.

### **ARE EMBEDDINGS SUFFICIENT FOR THE END TASK? | FEB'17-MAY'17 | TEAM: YASH CHANDAK**

- Embeddings alone does not provide finer control to model information diffusion in networks
- We classified nodes by modeling information propagation to the nodes from all of their k-hop shortest paths.
- The GLM can be perceived as a Data Structure with embeddings as data and DFS, or BFS walks as it's operators. We demonstrated that modeling paths explicitly instead of node structure improves node classification task

### **GATED ATTENTION PROPAGATION (GAP) KERNELS | JUNE'17-AUG'17 | TEAM: YASH CHANDAK**

- Existing models assumed the network to be homophilous and treated the node, and it is neighbors similarly
- We proposed mechanisms to learn a gating function to combine node and neighborhood information and as well learn an attention function to reweigh the edge weights.

### **SEMI-SUPERVISED CLUSTERABLE NODE REPRESENTATIONS | SEP'16-MAY'18 | TEAM: ANASUA MITRA**

- Explored the much-ignored clusterability aspect of Semi-supervised learning (SSL) for learning representations.
- We proposed a semi-supervised model to learn cluster invariant representations for nodes of similar labels.
- Relatively, the proposed model achieved superior classification (4.7%), clustering (33%) and visualization improvements over existing models on 9 datasets

### **FASHION ATTRIBUTE DETECTION AND SIMILAR CLOTHING RETRIEVAL. | JULY-DEC'15**

- Used ConvNets to classify attributes of images.
- Build a KD tree based retrieval system to find similar clothes in real-time.

### **A HYBRID FILTERING APPROACH FOR RECOMMENDER SYSTEMS USING CLUSTERING FOR CHAINS. | UG FINAL YEAR PROJECT | NOV'12-MAY'13**

- Built a ranking based recommendation system that clustered users' ranking (POSets/Chains)
- Proposed a social network based content boosted Collaborative filtering (CF) model using clustering for chains.
- Built a music recommendation system for my classmates. The proposed approach proved to be better than the conventional Clustering for chains based CF by 25%.