Priyesh Vijayan

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EDUCATION

PHD IN CS, MCGILL UNIVERSITY & MILA| 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 DISCOVERY WITH REINFORCEMENT LEARNING Graph Representation learning worksop, NeurIPS 2019 | arXiv:1907.11625
Harshavardhan Kamarthi, Priyesh Vijayan, Bryan Wilder, Balaraman Ravindran & Milind Tambe

NETWORK REPRESENTATION LEARNING: CONSOLIDATION AND RENEWED BEARING
arXiv:1905.00987
Saket Gurukar*, 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
Priyesh Vijayan, Shivashankar Subramanian & Balaraman Ravindran

GRID SCHEDULING USING IMPROVED PARTICLE SWARM OPTIMIZATION WITH DIGITAL PHEROMONES | IJSER 2012 Proceedings
A P Sarath Chandar, Priyesh Vijayan & Doreen Robin

AWARDS

PANICKKER 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

COURSES:

COMP767: Probabilistic Graphical Models
COMP550: Natural Language Processing
CS5011: Introduction to Machine learning
CS7015: Deep learning
CS6310: Artificial Neural Networks
CS6012: Social Network Analysis
CH5440: Multivariate Data Analysis
CS6720: Data mining

TALKS, CONFERENCES & SUMMER SCHOOLS

INVITED TALKS 'Transition from Machine Learning -> Deep Learning' (MLDLTISP'18), S.V.C.E | 2018
3RD 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 | DMKD Journal, 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 | | Institite 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.