Priyesh Vijayan

priyesh@hotmail.co.in | +91-9791407402
https://priyeshv.github.io/

RESEARCH INTERESTS

DEEP LEARNING: Graph Convolutional Networks • Structured prediction tasks in NLP
MACHINE LEARNING: Class imbalance • Semi-supervised & Multi-view learning • Active learning
SOCIAL NETWORK ANALYSIS: Node classification • Network Representation learning

EDUCATION

INDIAN INSTITUTE OF TECHNOLOGY MADRAS, CHENNAI

MS in Computer Science and Engineering
Jan'15 - Jun'18 Expected |• CGPA: 8.4 / 10

SRI VENKATESWARA COLLEGE OF ENGINEERING | ANNA UNIVERSITY, CHENNAI

B.E in Computer Science and Engineering
Aug'09 - May'13 | CGPA: 7.29 / 10

EXPERIENCE

KLA-TENCOR, CHENNAI | Intern

July 2014 – May 2015 | Supervisor: Dr. Mohan Mahadevan & Prof. Balaraman Ravindran
Project: Defect identification in SEM images | An IITM-KLA Tencor Collaboration

- Involved in designing Convnets and shared representation learning architectures specific to the problem

RISE-IIL, INDIAN INSTITUTE OF TECHNOLOGY MADRAS | Project Associate

July 2014 – May 2015 | Supervisor: Dr. 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. Well studied the class imbalance literature and experimented various techniques to address the problem.
- Worked on semi-supervised , multi-view and active learning approaches to handle class imbalance.

ERICSSON R&D | Research Intern

May 2013 – Aug 2013 | Supervisor: Shivashankar Subramanian

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

GLOBAL OPERATIONS TEAM | PAYPAL | Intern

Dec 2011| 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

PUBLICATION

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

Work done during internship at Ericsson R&D | Collaborators: Shivashankar Subramanian & Dr. Balaraman Ravindran

GRID SCHEDULING USING IMPROVED PARTICLE SWARM OPTIMIZATION WITH DIGITAL PHEROMONES | IJSER 2012 Proceedings

Collaborators: A P Sarath Chandar & Dr. Doreen Robin

PROGRAMMING

LANGUAGES
Expert: Python, MATLAB
Intermediate: C++ • Java • C

LIBRARIES
TensorFlow

RECENT COURSES: 2015-2017

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

AWARDS

PANICKKER AWARD | 2011-2012 | Institute level
This award is given to a pre-final year undergraduate student for exceptional academic performance and significant contribution to professional activities. It carries a citation, a rolling shield and a cash prize.

CONFERENCES & SUMMER SCHOOLS

ORAL PRESENTATION International Conference on Emerging Trends, ICET | 2012
POSTER PRESENTATION 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

FIRST RUNNER | IBM THE GREAT MIND TECH QUIZ | 2011 | Regional
WINNER | MY IDEA PROGRAM INSTITUTE LEVEL | 2011 | Institute level
ORAL & POSTER PRESENTATION | 2012 | My Idea Program Regionals
SEMI-FINALIST | INNOVATION DAY | 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 near by our college

TEACHING

COMMUNICATION SKILLS MENTOR | 2010-2012 | Institute level
Designed and conducted interactive English improvement sessions for students from rural background
C-TRAINING TUTOR | INSTITITE LEVEL | 2011-2012
Taught C Programming for M.C.A 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
It was the first of its kind from our college which saw a participation of 491 students. This event was part of our then newly launched SVCE-ACM Student Chapter
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 the crowd as that of the previous year
ORGANIZED LECTURES: | 2009-2012
Membrane computing workshop, various guest lectures on Web 2.0, TCS, FGPA and Android
ORGANIZED C-TRAINING CLASSES FOR CS AND M.C.A DEPT. | 2012

ORGANIZED CODING CONTEST | 2012

CERTIFICATIONS & TESTS

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
TOEFL: TEST OF ENGLISH AS A FOREIGN LANGUAGE | 106/120
GATE: GRADUATE APTITUDE TEST IN ENGINEERING | 97.433 PERCENTILE

RESEARCH PROJECTS

IS LARGER (MULTI-HOP) NEIGHBORHOOD INFORMATION USEFUL ? | JAN-MAY'15
Traditional works have dismissed the use of larger neighborhood information and never considered beyond 2 hop. In this work, I found that higher order information such as community information and structural role information are useful. I demonstrated this on protein function prediction task given a PPI network building on top multi-relation collective classification models.

HOW TO DESIGN A HYPER PARAMETER FREE GRAPH EMBEDDING METHOD ? | DEC'16-FEB'17
Random walk based node embedding approaches have a lot of hyperparameters to decide on what neighborhood to consider. I hypothesized that if the node embeddings can preserve long shortest paths then it encodes the graph more accurately without any need of hyperparameters. I used a RNN based language mode to learn to predict the next appearing node in the shortest path sequence, ending up learning a shortest path generator. The proposed method fared similar and even better than the SOTAs

ARE EMBEDDINGS SUFFICIENT FOR THE END TASK? | FEB'17-MAY'17 | TEAM: YASH CHANDAK
I argue that embedding does not provide finer control to model information diffusion in networks. Herein, we proposed to classify nodes by modeling information propagation across all shortest paths to nodes from k-hop neighbors. The model is build over the previous work. The graph language model RNN acts as an operator with embeddings as data and DFS or BFS walks as it 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 use fixed weights for combining node and neighborhood information and more over assume all neighbors are equal. This is not useful in cases of lower homophily valued datasets. Herein we proposed mechanisms to learn gating function to combine node and neighborhood information and as well attention function to reweigh the edge weights.

HIGHER ORDER PROPAGATION FRAMEWORK | SEP'17-NOV'17 | TEAM: YASH CHANDAK
In the GAP kernels we proposed a generic kernel formulation. On deeper analysis we figured out problems with existing line of work build on Weisfeiler-Lehman Kernels, Information Morphing. We mathematically analyze the problem and provide solutions to the same. We figured that fixing Information morphing problem allowed us to gain similar performances to the GAP kernel. And we also proposed an iterative learning & inference mechanism to scale to larger multi hop information which cannot be captured otherwise. We have highly scalable mini-batch implementation with sparse operators.

IMPROVED SEMI-SUPERVISED LEARNING FOR NODE CLASSIFICATION WITH NMF | SEP'16-NOV'17 | TEAM: ANASUA MITRA
We proposed an objective term for measuring clusterability of the reduced space of NMF which is an integral part of semi-supervised learning not explored much before. The proposed model learns clusters of nodes such that there is high label smoothness within clusters and high variance in class assignment across clusters. With extensive ablation study, visualizations, clustering and classification scores on 9 datasets we make the point that clusterability is an important aspect of semi-supervised learning which is not to be ignored.

VERIFICATION OF ASYNCHRONOUS BEHAVIOR OF SPIKING NEURAL P (SNP) SYSTEM USING PETRI NETS | SEP'12-NOV'12 | TEAM: SARATH CHANDAR AP
Dynamic Petri Nets unlike SNP systems are well studied concurrent mathematical models with good analysis tools. In order take advantage of the established DPN to study SNP systems, we proposed an algorithm for conversion of SNP systems into Dynamic Petri Nets.

A HYBRID FILTERING APPROACH FOR RECOMMENDER SYSTEMS USING CLUSTERING FOR CHAINS. | UG FINAL YEAR PROJECT | NOV'12-MAY'13
Proposed a social network based content boosted Collaborative filtering (CF) 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%.

FASHION ATTRIBUTE DETECTION AND SIMILAR CLOTHING RETRIEVAL. | JULY-DEC'15
Used CNNs to classify attributes of images and used the learned representations to find similar clothes. Used Kd trees based retrieval system far faster real time retrieval.