Y NARASIMHULU

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GitHub: https://github.com/Narasim

EDUCATION

Ph.D. Jan 2019 - July 2024

· Pursuing Ph.D. at **School of Computer and Information Sciences(SCIS), University of Hyderabad**, Hyderabad.(Almost at the ending stage)
Thesis Title: Design, and Analysis of Classification Algorithms.

M.Tech

· Post Graduation (Computer Science), from **St.John's College of Engineering and Technology**, JNTU-Anantapur, Yemmiganur.

ACHIEVEMENTS

. Member of a winning team from the University of Hyderabad: Cardiff University's CyberAI Research Challenge in collaboration with the University of Hyderabad and Osmania University.
Title: Privacy Preserving Federated Learning on Healthcare Data
Further extending this work into a Journal Publication.

S.No.	Board and Exam	Award	Qualifying Year
1	UGC - NET	Junior Research Fellow(JRF)	July - 2018
2	UGC - NET	Assistant Professor	July - 2018
3	UGC - NET	Assistant Professor	December - 2017
4	UGC - NET	Assistant Professor	June - 2014
5	GATE	Computer Science	2019

RESEARCH EXPERIENCE

. A **Senior Research Fellow** from January 2021 to Present at University of Hyderabad.
. A **Junior Research Fellow** from January 2019 to December 2020 at University of Hyderabad.

RESEARCH INTERESTS

· Clustering
· Nearest Neighbors
· Matrix Approximations
· Classification
· Deep Learning
· Optimization Algorithms

TECHNICAL STRENGTHS

- **Computer Languages:** C, and Python
- **Programming** Numpy, Pandas, Tensorflow, Keras & sklearn

CERTIFICATIONS

- **"Foundations of Data Science"**, by One Fourth Labs - Mitesh M Khapra, and Pratyush Kumar, IIT Madras Research Park.
- **"Deep Learning"**, by One Fourth Labs - Mitesh M Khapra, and Pratyush Kumar, IIT Madras Research Park.

PAPERS PUBLISHED/UNDER REVIEW

Ph.D. Thesis Title: Design and Analysis of Classification Algorithms

1 **"Low-rank Binary Matrix Approximation using SVD Based Clustering Technique: Detecting Autism Spectrum Disorder (ASD)".**

Description: Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition characterized by challenges in social interaction, communication, and repetitive behaviors. Early identification of ASD is crucial for optimal developmental outcomes, enhanced quality of life, and mitigating behavioral challenges. This study proposes a novel low-rank binary matrix approximation approach for the early detection of ASD. Our proposed algorithm offers a polynomial-time solution, a significant improvement over existing exponential-time methods.

Publication: Y Narasimhulu, V China Venkaiah, **"Low-rank Binary Matrix Approximation using SVD Based Clustering Technique: Detecting Autism Spectrum Disorder (ASD)"**, Major revision submitted to SN Computer Science Journal, Springer Nature.

2 **"Revisiting Winnow: A Modified Online Learning Algorithm for Efficient Binary Classification"**

Description: In many real-world datasets, not all features contribute equally to the prediction task. Some features may be redundant, noisy, or irrelevant, leading to increased computational complexity and decreased model performance. We propose a modified winnow algorithm that employs multiplicative updates while learning from the data with real values in an online mode. The proposed online algorithm shares similarities with the classical perceptron algorithms and the winnow algorithm.

Publication: Y Narasimhulu, Pralhad K, V China Venkaiah, **"Revisiting Winnow: A Modified Online Learning Algorithm for Efficient Binary Classification"**, Manuscript accepted by, Statistical Analysis and Data Mining, Wiley.

3 **"ActiveSVM: An Active Learning Algorithm With Novel Initialization, and SVM Model Update Techniques"**

Description: In the current scenario, there is a vast amount of data available, out of which there is less labeled data. Harnessing huge amount of data generated and constructing supervised classifier from such data can be both a costly and time-consuming task. We introduced novel data initialization and uncertainty sampling methods, enhancing the efficiency and accuracy of SVM models in active learning scenarios by addressing key challenges in labeled data selection and model updating.

Publication: Y Narasimhulu, V China Venkaiah, **"ActiveSVM: An Active Learning Algorithm With Novel Initialization, and SVM Model Update Techniques"**, Manuscript communicated to the Journal, Advances in Data Science and Adaptive Analysis, World Scientific.

4 **"CKD-Tree: An Improved KD-Tree Construction Algorithm"**

Description: KD-Tree for classification is a pretty fast algorithm in itself. It may not be fast for very larger datasets. To improve on the already fast KD-Tree classification algorithm, and to create an even faster version of KD-Tree we make use of Coresets. We proposed an enhancement to the KD-Tree structure using a lightweight coreset algorithm to reduce data size, leading to faster indexing and improved classification performance in large datasets.

Publication : Y Narasimhulu, Ashok Suthar, Raghunadh Pasunuri, V China Venkaiah (2021), **"CKD-Tree: An Improved KD-Tree Construction Algorithm"**, Published in Proceedings of the International Semantic Intelligence Conference 2021(ISIC 2021), CEUR Conference Proceedings(CEUR-WS.org)(SCOPUS Indexed: https://www.scopus.com/sourceid/21100218356).

5 **"Nearest Neighbors via a Hybrid Approach in Large Datasets: A Speed up."**

Description: K-Nearest Neighbors(K-NN) technique is one of the earliest and simplest method used for classification. Nearest Neighbors is a supervised algorithm that classifies or predicts the value of a data point based on its similarity to other data points. This work concentrates on finding k-nearest neighbors of a query point q. We introduced a hybrid algorithm that leverages a lightweight coreset to sample points for K-Means clustering, thus speeding up the process of identifying k-nearest neighbors. This approach is shown to be computationally efficient compared to traditional methods.

Publication: Narasimhulu Y, Pasunuri R., Venkaiah V.C. (2021), **"Nearest Neighbors via a Hybrid Approach in Large Datasets: A Speed up."**, In: Chaki N., Pejas J., Devarakonda N., Rao Kovvur R.M. (eds) Proceedings of International Conference on Computational Intelligence and Data Engineering. Lecture Notes on Data Engineering and Communications Technologies, vol 56. Springer, Singapore(SCOPUS Indexed: https://www.scopus.com/sourceid/21100975545).

Other Publications

6 **Umesh Kumar, Y. Narasimhulu, V. Ch. Venkaiah, "MQG-PRNG and Non-Associative Quasigroup based Stream Cipher"**, Communicated to a Journal.

7 **M. S. Raghavendra, P. Chawla and Y. Narasimhulu, "A Probability Based Joint-Clustering Algorithm for Application Placement in Fog-to-Cloud Computing,"**, 2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), Noida, India, 2021, pp. 1-5, Publisher: IEEE. Doi: 10.1109/ICRITO51393.2021.9596534(SCOPUS Indexed).

8 **Vardhani P.R, Priyadarshini Y.I., Narasimhulu Y. (2019), "CNN Data Mining Algorithm for Detecting Credit Card Fraud."**, Published in Soft Computing and Medical Bioinformatics. SpringerBriefs in Applied Sciences and Technology. Springer, Singapore(Web of Science Indexed: https://www.webofscience.com/wos/woscc/full-record/WOS:000445142100010).

9 **K.Vinod Kumar Reddy, Y. Narasimhulu, "Proficiently Sharing Data Using Name Based Routing Algorithm in Big Data."**, Published in International Journal of Trend in Research and Development (IJTRD), ISSN:2394-9333, Special Issue - RIET-17 , December 2017(UGC-Care List).

CURRENT WORKS

. Deep Learning: Transformers, LLama
. A survey on various Online learning algorithms
. Privacy Preserving Federated Learning

MY PEER REVIEWS

S.No.	Name of the Journal/Conference	Count
1	IEEE Access: IEEE Journal	10
2	Neural Computing and Applications: Springer Journal	1
3	Soft Computing: Springer Journal	2

Reviews details can be found at: Web of Science or ORCID

CONFERENCES ATTENDED

- **"ACM COMPUTE, Sixth Annual Conference"**, at University of Hyderabad, Hyderabad, India 2023. Also a volunteer in the organising committee.
- **"International Semantic Intelligence Conference(ISIC - 2021)"**, at MERI College of Engineering & Technology, New Delhi, India 2021.
- **"Third International Conference on Computational Intelligence & Data Engineering (ICCIDE - 2020)"**, at Vasavi College of Engineering(Autonomous), Hyderabad, Telangana, India 2020.
- **"Second International Conference on Cognitive Science and Articial Intelligance(ICCSAI - 2018)"**, at Sree Vidhyanikethan Engineering College(Autonomous), Tirupati, Andhra Pradesh India 2018.

EXTERNAL LINKS

. LinkedIn: https://www.linkedin.com/in/narasimhulu-yeggoli/
. GitHub: https://github.com/Narasim
. ORCID: https://orcid.org/0000-0001-8482-7678
. Google Scholar: https://scholar.google.com/citations?user=agFT18IAAAAJ&hl=en
. LeetCode: https://leetcode.com/narasimhuluy/

CAMPUS TRAININGS CONDUCTED

- 22 Days training on **'Data Structures and Algorithms'** at 'Shri Ramdeobaba College of Engineering and Management', Nagpur, Maharastra.
- 15 Days training on **'Problem Solving Skills'** at Mohan Babu University(MBU), Tirupati.
- An Andhra Pradesh State Skill Development Corporation 2 day training programme on **'C-Programming and Data Structures'** at 'QIS College of Engineering & Technology', Ongole.
- An Andhra Pradesh State Skill Development Corporation 1 day campus training programme on **'C-Programming and Data Structures'** at 'QIS College of Engineering & Technology', Ongole.

DECLARATION

Hereby declare that the information furnished above is true.

Y NARASIMHULU

Y. Narasimhulu