Lokesh Nagalapatti

Chennai, India
+91-9840364463
nlokeshiisc@gmail.com

Interests

AI — My research theme so far has been on making ML algorithms work with data that is noisy or of bad quality. My broader interests lie in various fields of ML including Social Networks, Federated Learning, Fair & Explainable ML, NLP etc.

Work Experience

2019-2020 — Research Software Engineer at IBM Research-India.

2016-2017 — Member Technical Staff at Adobe R&D Systems, Bangalore

2015-2016 — Software Development Engineer-1 at Samsung R&D Institute, Bangalore.

Publications

ICDE'21 — Eitan Farchi, Ramasuri Narayanam, **Lokesh N**, Ranking Data Slices for ML Model Validation: A Shapley Value Approach

AAAI'21 — **N Lokesh**, Ramasuri Narayanam, "Game of Gradients: Mitigating irrelevant clients in Federated Learning". In: AAAI Conference on Artificial Intelligence

KDD'20 Tutorial — Overview and Importance of Data Quality for Machine Learning Tasks. In: 26th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining.

WSDM'20 — Sambaran Bandyopadhyay, **N Lokesh***, Saley Vishal Vivek*, and M Narasimha Murty. "Outlier Resistant Unsupervised Deep Archi- tectures for Attributed Network Embedding".* - Equal contribution In: 13th ACM international conference on Web search and data mining (WSDM'20).

AAAI'19 — Sambaran Bandyopadhyay, **N Lokesh**, and M Narasimha Murty. "Outlier Aware Network Embedding for Attributed Networks". In: AAAI Conference on Artificial Intelligence

Patents

Filed USPTO — System and Method for Online Model Management based on Usefulness of Data with respect to different data quality metrics

Filed USPTO — Framework for Explainable Data Readiness Metrics and Interactive Remediation

Approved by IBM — A System and Method to Select Minimal Subset of Informative Clients for Federated Learning using Influence Functions

Approved by IBM — A System and Method to Assess the Quality of Unlabeled Data in Unsupervised Learning Settings

Approved by IBM — An Outlier Aware Federated Learning System and Dynamic Method to Determine Globally Consistent Outliers from Individual Clients' Private Data

Academic Overview

2017-2019 — M.Tech. in Computer Science, the Indian Institute of Science (IISc), Bangalore. 9.0 CGPA. Distinction class.

2011-2015 — B.E. in Computer Science and Engineering, College of Engineering Guindy (CEG), Anna University, Chennai. 8.83 CGPA. Distinction class.

2010-2011 — Higher Secondary Education in Computer Science stream, State Board of Tamil Nadu, 9.825 CGPA.

Courses at IISc

Theory — Design and analysis of algorithms, Graph theory, Real analysis (audit)

Systems — Database management mystems(DBMS), Operating System(OS), Program analysis and verification(PAV), Computer architecture (audit)

AI — Linear algebra, Probability, Pattern recognition and neural networks, Topics in pattern recognition(TIPR), Natural language understanding(NLU)

Achievements

Innovation Award — Received at IBM Research-India in recognition of leading and driving brainstorming sessions in the team.

All Hands Award — Received at IBM Research-India in recognition of contributions to the problems of *representative set sampling* and *data homogeneity* in structured data. This solution is integrated in Data Refinery, a flagship product of IBM.

Gate'17 — Secured All India Rank 189 in GATE [Graduate Aptitude Test in Engineering] (Computer Science). 99.99^{th} percentile.

NIPUN — Developed a POC, 3D Print preview and presented in NIPUN, an intra Samsung event. Secured second place and won prizes worth *INR 50,000/-*.

Advanced Coder — Cleared Advanced level Coding contest conducted in Samsung

Microsoft Code.fun.do — Developed a game in Unity for Microsoft 3 days hackathon. Runner in the event and won cash prize worth *INR 16,000/-*.

Invited Talks

2020 — Invited by the Department of Management, JDBI Kolkatta, to talk in Management Development Programme on "*Business Analytics / AI Enabled Business*".

2019 — Invited by CS dept., College of Engineering Guindy to talk on *"Outsmarting the outliers in Social Networks"*.

Responsibilities

TA - Spring, 2020 — Served as a Teaching Assistant for the course *Deep Learning*, offered by Prof. Sargur N. Srihari, a SUNY Distinguished Professor at IISc

CSA-UGSS — Organizer of CSA Under Grad Summer school in IISC, an event for engg. undergrads in India

NSS — NSS unit II volunteer in 2011, 2012 and Core committee member in 2014 at CEG

Vidhaigal'14 — Organizer of Vidhaigal'14 an event conducted for specially abled school children in Chennai

Abacus'14 — Organizer of events DB-Mania a Database event, Reverse Coding a Coding event in Abacus, CS dept. Symposium at College of Engineering, Guindy.

Research Projects

Master's dissertation — **Outsmarting the outliers in attributed network representation learning**. *grade - 10/10*

Project I
- Learn outlier aware embeddings for social networks with Structure (Adjacency Matrix) and allied content (TF-IDF Matrix). Proposed Non-negative Matrix Factorization based techniques.
- Accepted in **AAAI'19**

Project II
- Deep learning techniques to learn Outlier aware embeddings for Social Networks. Proposed adversarial learning based technique to align the structure and content embedding spaces.
- Accepted in **WSDM'20**
- MTech Thesis Presentation.pdf Mtech_Thesis.pdf

TIPR Project — **All2Vec - *Heterogeneous Network Embedding Learning*** grade - 9/10
- Learned embeddings of nodes in a heterogeneous citation network and predicted the authors, keyworkds and conference venue of an anonymized paper.
- All2Vec Presentation.pdf

PAV Project — **May points to analysis in Java** grade-9/10

- Implemented may points to analysis in Java using IBM Wala framework
- One of the 2/12 teams to receive 100/100 for the project

OS Project **Pintos** grade-10/10

- Implemented kernel routines for threading, loading and executing user programs, virtual memory and file systems for Pintos an OS framework designed by Stanford.

NLU Project **Towards universal Sentence Embeddings**. grade - 9/10

- Enhanced sentence embedding by concatenating Smooth Inverse Frequency (SIF) vectors with LSTM outputs
- NLU Presentation.pdf NLU Report.pdf

DBMS Project **Accelerating FPC - *Optimizing FPC module in Postgres*** grade-9/10

- Optimized FPC (Foreign Plan Costing) in PostgreSQL by truncating extraneous function calls and achieved a 100x reduction in execution time.
- FPC Presentation.ppt FPC Report.pdf

References

- Prof. M Narasimha Murty, Professor at the Indian Institute of Science, Bangalore.
  Email: mnm@iisc.ac.in
- Dr. Ramasuri Narayanam, Senior Research Scientist at IBM Research Labs, Bangalore.
  Email: ramasurn@in.ibm.com