

Ashutosh Tiwari

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EDUCATION

Indiana University, Bloomington (Graduating 1st week May 2023)

Master of Science in Data Science (Computational and Analytical Track) 3.86/4.0

Bloomington, IN

Aug. 2021 – May. 2023

National Institute of Technology

Bachelor of Science in Computer Science 8.32/10.0

Patna, India

Aug. 2011 – Jun. 2015

PUBLICATIONS

[1] Ashutosh Tiwari, Sadamori Kojaku, Yong-Yeol Ahn, “Biased Contrastive Learning debiases Graph Neural Networks,” *International Conference on Network Science (NetSci)*, 2023.

- Have submitted @IC2S2 as **first** author on **Fairness Aware Recommendation System and Graph ML**, pending decision notification

RESEARCH EXPERIENCE / INDEPENDENT STUDY

- Implementing novel training frameworks that result in unbiased (or fair) models from “biased” datasets at [IUNI](#) with Prof. YY Ahn and Prof. S Kojaku as part of my Independent Study. Summer 2022 - Present
- Working as a paid RA for, “**User Intent as a Network**” with Prof. YY Ahn, P Kantak and FB Yara. Project is funded by Kelly Business School. Goal is to be able to quantify and thus act upon that “intent” network. Summer 2022 - Fall 2022
- Was part of [NLP Lab@IUB](#) with Prof. D Cavar. Contributed to design of [TieML](#) and Events’ Timeline modelling. Fall 2021

WORK EXPERIENCE

Senior Software Dev Engineer (ML Platform)

[SWIGGY](#)

Jan. 2019 – Jul. 2021

DATA SCIENCE PLATFORM, TIME SERIES FORECASTING

- Was part of team that worked on Feature Store and pipeline which feeds on-demand features to deployed ML models at production scale(4Bn rows, 1Mn QPS / day). Pipeline supported multichannel ingestion, i.e. Spark, Flink and user files etc.
- Founding member of Forecasting and Correlation Platform which was considered by many teams to forecast concerned time series. These forecasts power critical scaling decisions across organizations in real time.
- Led DAQ, a tool used to scrape APIs at scale. Used to collect data for analysis/ model training at a scale of 15 M rows daily.

Software Development Engineer(ML)

[FLIPKART \(a Walmart company\)](#)

Sep. 2017 – Jan. 2019

SEARCH RELEVANCE, QUERY INTENT, NLP

- Was responsible for improvements/inception of search intent models(CRF/Neural Network based), identifying error classes, coming up with solutions, and fixing them. These models power user search and discovery for millions every day.
- Implemented a FastText based query store classifier, which predicts the category of a tail query.
- Implemented the first workflow to automate training and auto-deployment of various search models in Flipkart. First was written using Luigi and later migrated to Airflow.
- Wrote a generic framework using Airflow which at runtime creates generic dags for different ML models and orchestrates their training to deployment flow, including data and model validations.
- Implemented large scale (4Bn+ datapoints) pipelines using Cascading/HDFS to extract data from user events and then transform it to be used for training these models.

Software Development Engineer

[GROUPON](#)

Sep. 2016 – Sep. 2017

BACKEND ENGINEERING

- Worked on a component called Cyclops, an interface between Customer representatives and internal services

Software Engineer

[NETSPEED SYSTEMS \(Acquired by Intel\)](#)

Sep. 2015 – Aug. 2016

GRAPH ALGORITHMS, NETWORK ON CHIP

- Led engineering efforts on modules like Polarity based Arbitration, Multi-Cast Filtering, Structural Latency Breakdown etc.

TEACHING EXPERIENCE

Teaching Assistant for [Network Science](#) (INFO-I 606) with Prof. YY Ahn

Spring 2023

Teaching Assistant for [Machine Learning](#) (CSCI-B 555) with Prof. R Khardon

Fall 2022

Teaching Assistant for [Network Science](#) (INFO-I 606) with Prof. YY Ahn

Spring 2022

SELECTED PROJECTS

BiasNet <i>Deep Reinforcement Learning, PyTorch, Actor Critic Algorithm, On-policy Model Free</i>	Code/Report
• Learning to fight in <u>Street Fighter II</u> with induced relational bias from differential game scenes.	
DeepFoodie <i>Python, Tensorflow, Self Supervised Deep Clustering, Deep Learning, Transfer Learning</i>	Code/Report
• Clustering dishes on basis of their ingredient embeddings. These ingredient embeddings are generated by a NN.	
Continuous Dominant Set Repair <i>C++, Graph Algorithms, Guha and Khuller's Algo., Greedy</i>	Code
• Repairs a broken link in Continuous Dominant Set in $O(\Delta^2)$, where Δ being the avg cardinality of connected graph.	
Humana Mays Healthcare Analytics Case Competition <i>Boosted Trees, Feature Engineering</i>	Code
• 11th <u>rank</u> on leaderboard. Hosted by TAMU and Humana Mays, 2021.	
BlindNet <i>Python, Pytorch, Deep Learning, Transfer Learning</i>	Code/Report
• Image to vector generation on Coco dataset.	
AnalyticsVidhya Solutions <i>Python, Tensorflow, Torch, Time Series, Feature Engineering, Catboost</i>	Code
Investigating Bias Manifolds <i>Bias Manifolds, Bias Progression, Measuring Bias, Python, Word2vec</i>	Code/Report

TECHNICAL SKILLS

Search Relevance, Recommendations, Graph Neural Networks, Fairness Aware Modeling, Computational ML, NLP, Computer Vision, DL, Spark, Python, Scala, C++, Contrastive Learning

Frameworks/Libraries/Tools: Pytorch Geometric, Pytorch, Tensorflow, Sklearn, Numpy, Pandas, Matplotlib, AWS, HDFS

RELEVANT COURSES SO FAR

Computational ML(B555), Deep Learning(E533), Reinforcement Learning(B659), Computer Vision(B657), Statistics(S520), Independent Study (Working on Fairness Aware AI and Bias manifolds in Graph), Advanced Database Systems(B561)