Indraneil Paul
Computer Science Dual-Degree | IIIT Hyderabad

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🎓 Education

2019	**Masters by Research**, IIIT Hyderabad	CGPA 8.52
2017	**Bachelors of Technology in Computer Science**, IIIT Hyderabad	CGPA 7.04
2013	**Higher Secondary**, PACE Junior Science College	HSC 89.1%
2011	**Secondary**, Hiranandani Foundation School	ICSE 90.2%

🎒 Student Experience

Ongoing
August 2019

Software Development Engineer I, Amazon, Hyderabad
> Working on designing and implementing a constraint-aware cost optimised package drop-off Planner for allowing middle-east merchants to rank options to schedule drop-offs to multiple Delivery Stations
> Scaled an tier 1 asynchronous service for year-end peak including database tuning, JVM latency optimizations, profiler based host type changes and scaling queue workers

Java | Spring | AWS SNS | AWS SQS | AWS DynamoDB

August 2019
June 2016

Research Assistant, Language Technologies Research Center, IIIT Hyderabad
> Worked under the guidance of professor **Ponnurangam Kumaraguru**
> Characterized the connectivity and activity levels of verified users on social media platforms
> Employed temporal, network and content based features for a discriminative model
> Uncovered the aspects of a user's profile, topic usage and activity that best predict verification
> Released a fully featured **dataset** of 400k+ users, containing 79+ million edges and 494+ million Tweets

NetworkX | Graph-Tool | XGBoost | Neo4j | NLTK | Twitter API | Python | PoweRLaw | R

July 2019
July 2018

Research Assistant, Machine Learning Lab, IIIT Hyderabad
> Worked under the guidance of professor **Sujit Gujar**
> Explored the use of two-sided matching algorithms on dynamic graphs
> Researched location constraint aware graph matching
> Exploring applications in resource exchanges and ride sharing using penalty based mechanism design

ParamILS | MATLAB | CVXOpt | Python | C++

August 2017
May 2017

Google Summer of Code, Green Navigation, Netherlands
> Improved fuel consumption prediction in electric vehicles given intended route and associated terrain
> Modified pre-existing machine learning pipeline and enhanced performance by 39%
> Employed bayesian optimization for optimal model hyperparameter selection

TensorFlow | Pandas | BayesOpt | Python

📰 Publications

Elites Tweet? Characterizing the Twitter Verified User Network — LSGDA Worskshop, ICDE 2019, Macau
Indraneil Paul, Abhinav Khattar, Shaan Chopra, Ponnurangam Kumaraguru, Manish Gupta

What sets Verified Users apart? Insights, Analysis and Prediction of Verified Users on Twitter — WebSci 2019, Boston
Indraneil Paul, Abhinav Khattar, Shaan Chopra, Ponnurangam Kumaraguru, Manish Gupta

Insights into, Analyses and Prediction of Verified Users on Twitter — Masters Thesis, IIIT Hyderabad
Indraneil Paul

⚗️ Research Interests

Graph Machine Learning, Natural Language Processing, Sequence Learning, Meta Learning, Transfer Learning, Multi-Agent Systems, Optimization Methods, Probabilistic Graphical Models and Deep Learning

💻 Major Projects

Kaggle Two-Sigma Financial Modelling Challenge   January 2017 - March 2017

Implemented a pipeline to compare the efficacy of various time series forecasting approaches in accurately predicting the future value of various anonymized financial instruments. Utilized GARCH models and multiple boosting techniques, eventually settling on an ensemble.

`TensorFlow` `Statsmodels` `XGBoost` `ARCH` `Python`

Author Context   January 2016 - May 2016

Created a system that interprets a large number of Computer Science research papers from the DBLP archives and uses the set of topical tags corresponding to each paper, to predict a field in which a certain author is likely to contribute in the near-future. Extended the system to predict future academic collaborations based on topical fingerprints.

`Scikit-Learn` `LibSVM` `LMDB` `Python`

NBA Match Prediction   July 2015 - December 2015

Developed a model that could predict, with competitive accuracy, the result of a basketball match between any two NBA teams factoring in player form, team form and past head-to-head results. Extended the model to factor in player synergies and team chemistry computed using a skills plus-minus framework.

`MLPack` `C++`

News Article Autosummarization   January 2017 - May 2017

Implemented an hierarchical LSTM based sequence to sequence model to automatically generate a grammatically coherent gist of a news article. Trained multiple sequence models in a topic aware manner aided by Hierarchical Dirichlet Process based multilevel topic models.

`Keras` `Python`

Wikipedia Search Engine   August 2017 - November 2017

Developed a search engine using term-document techniques capable of ranked retrieval over body and header text, references, links and metadata on a Wikipedia XML dump. Enhanced the system to support caching and B+ Tree indexing to enable the system to scale to the entire Wikipedia 14 GB corpus.

`Python` `BTrees` `SAXParser`

Nash Equilibrium Tool   June 2016 - January 2017

Implemented the simplex based Lemke-Howson method to converge to the Mixed Strategy Nash Equilibrium of a two-player non-zero sum game.

`MATLAB` `LinProg`

Glare Removal   May 2015 - November 2015

Implemented a novel color-plane based approach to detect primary glare regions in images and rectify them using illumination constrained inpainting techniques extrapolating chromaticity and luminance from surrounding non-glare regions without using multiple images.

`MATLAB` `C++`

HTTP Proxy   January 2017 - May 2017

Developed a proxy for HTTP requests which conditionally forwards requests in a rule based manner. Further extended the system to support simple caching of requests and thread pool multithreading for heavy workloads.

`Python` `Multiprocessing`

Tabu Search   July 2016 - October 2016

Implemented the Tabu Search variant of gradient ascent in MATLAB to approximate the solution to a 1500 city Travelling Salesman Problem. Leveraged recency and frequency based Tabu lists to attain substantial improvements over the baseline Simulated Annealing approach.

`MATLAB`

📖 Relevant Coursework

Undergraduate — Data Structures, Algorithms, Operating Systems, Computer Systems Organisation, Distributed Systems, Database Management Systems, Computer Networks, Graphics, Digital Image Processing, Digital Signal Analysis and Applications, Number Theory and Cryptography, Natural Language Processing and Artificial Intelligence

Graduate — Advanced Computer Networks, Game Theory and Mechanism Design, Machine Learning, NLP Applications, Information Retrieval and Extraction, Statistical Methods in Artificial Intelligence, Modelling and Simulations, Computer Vision and Optimisation Methods

⚽ Miscellaneous

2016 **Student Placement Coordinator**, IIIT Hyderabad
2017 **College Football Team**, IIIT Hyderabad