Aditya Agarwal

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Education

PES University (formerly PES Institute of Technology) — Bangalore, India
Bachelor of Engineering in Computer Science and Engineering; GPA: 9.31/10.0 — *Aug 2013 - May 2017*

Relevant Coursework: Analysis & Design of Algorithms, Data Structures, Database Management Systems, Cloud Computing & Big Data, Machine Learning, Natural Language Processing

Kendriya Vidyala — New Delhi, India
Class XII AISSCE, CBSE; 92.4 % — *Apr 2012 - Mar 2013*

Kendriya Vidyala — New Delhi, India
Class X AISSE, CBSE; 10.0/10.0 — *Apr 2010 - Mar 2011*

Skills

- **Languages**: C#, Java, Python, MySQL, JavaScript
- **Technologies**: Natural Language Processing, Deep Learning, Android Development, ASP .NET, Signal Processing, Big Data

Experience

Microsoft India R&D — Hyderabad, India
Data Scientist II - Bing Search Technology Center India — *September 2019 - Present*

- **Related QnA (People Also Ask), Bing STCI**: Our team owns the Bing's People Also Ask experience which is, showing related question and answers for a given user query to solving intents in query exploration and reformulation. Our experience currently shows up in seven markets.
  - I worked on enabling Bing's PAA in French and German markets. I am currently working on improving relevance and coverage in these markets apart from reducing defects stemming from issues in casing, spelling and grammatical incorrectness.
  - I am also working on universalizing our Bert based models on query to question, grammatical error correction using Language Model, relevance ranker among other models using Unicoder and Multilingual BERT.
- **Azure Health Data Workbench, Azure Global Engineering**: We try to leverage the power of AI and the Cloud to solve some of the challenging problems in the sphere of healthcare in India and the World impacting the lives of millions of people.
  - Our goal is to enable data scientists to build their machine learning workloads on healthcare data and draw intelligent insights from it.
  - Built an Azure pipeline to pull medical health records from hospitals' on premise system to the cloud performing a series of pre-processing, de-identification and ingestion steps to store healthcare data in a queryable format also ensuring inter-operabitlity.
  - Also tried several machine learning algorithms on the cloud to draw intelligent insights from the data.
- **Project Sangam - Digital Learning Platform, Azure Global Engineering**: Project Sangam is cloud-hosted, mobile-first community learning platform built to deliver content at large scale.
  - I owned several key areas like setting up the deployment health monitoring framework, API automation, developed the reward based program called Certificates, automated creation of deployments etc.
  - I single-handedly worked on seamlessly onboarding the Swachhbharat Mission program which helped train 110,000+ municipal functionaries across 4000+ cities in India on best sanitation practices. The partnership between Microsoft and MoHUA received widespread media attention.

VMWare India R&D — Bangalore, India
Member of Technical Staff — *Jul 2017 - Dec 2018*

- **Workspace One - SSO vIDM for VMWare's SAAS offering**: Workspace One is a product of VMWare's End User Computing business unit. Workspace One is a digital platform that delivers and manages any app on any device by integrating access control, application management and multi-platform endpoint management.
  - During my short stint with the team, I worked on automating several release pipelines and processes to ensure that we were producing code of the highest quality in our production systems.

Microsoft Research Labs — Bangalore, India
Research Intern — *Nov 2016 - May 2017*

- **Second Opinion**: Second Opinion is a medical application platform to detect the onset of an oncoming serious illness.
  - Built a medical application platform called second opinion to connect patients with the doctors from multi-specialty hospitals to detect the onset of an oncoming serious illness.
  - Built several machine learning models to automatically predict the set of lab tests that need to be conducted based on the patients' symptoms

- Implemented a boosted random forest algorithm to predict a disease from the most commonly occurring diseases like hypertension, diabetes etc. taking the result of the lab tests as input thereby assisting the doctors in making a diagnosis.

This work was done in collaboration with the Microsoft Intelligent Network for Eyecare (MINE), IDC

University of Calgary Calgary, Canada
MITACS Research Intern *May 2016 - Aug 2016*

- **The Ranchlands Hum**: Worked on developing a noise capture application to store and analyze low frequency audio data.
  - I helped develop a signal processing based android application to store and analyze low frequency audio data to investigate an urban noise nuisance called the Ranchlands Hum.
  - Worked on a digital signal processing technique to perform large scale calibration of android device microphones.

Microsoft Research Labs Bangalore, India
Software Engineering Intern *Nov 2015 - May 2016*

- **MEC - Massively Empowered Classrooms**: MEC is a flagship project developed by Microsoft Research India.
  - Worked on automating data retrieval tasks and providing insights into data with interactive data visualization techniques.
  - Also worked on the deployment of this platform and for migrating the learning contents from Moodle for education in Mauritius by the Mauritius Institute of Education.

The online learning platform called Virtual Campus was launched as a partnership between Microsoft Research India and Mauritius Institute of Education and received media coverage as well.

PROJECTS

- **Pose Based Action Recognition using Hierarchical BLSTM, paper**: Developed an end-to-end pipeline for the task of human action recognition on video sequences using 2D joint trajectories estimated from a pose estimation framework. A Hierarchical Bidirectional Long Short Term Memory (HBLSTM) Network is used to model the spatio-temporal dependencies of the motion by fusing the pose based dense trajectories in a part based hierarchical fashion.
- **Short-Term Context Based Fast Multilingual Acoustic Model for Low Resource Languages, paper**: Built a Multilingual Automatic Speech Recognition System based on short term contextual temporal features learned on Convolutional Neural Networks (CNNs) with a non-sequential discriminative network. Three low resource Indic languages, Gujarati, Tamil, and Telugu are used to ascertain the performance of the system.
- **Sentiment Analysis using RNN and CNN**: Developed a bidirectional Recurrent Neural Network and a Convolutional Neural Network for the task of performing sentiment analysis on the Stanford Sentiment Tree bank dataset for learning a 3-way and 5-way classifier. The Sentiment Treebank was visualized before annotation using Stanford coreNLP parser and after annotation using the NLTK parser.
- **Elucidate, paper**: Devised a grammar to generate Mathematics word statement problems dynamically from a given system of non-singular equations. Built as a pedagogical tool for learning in India.
- **Sound Event Detection, paper**: A sound detection system trained using minimally annotated dataset of single sounds to identify and separate components of polyphonic sounds using Deep Learning Neural Networks. Sounds are pre-processed using Principal Component Analysis and Non-negative Matrix Factorization.
- **Apache Giraph - Case Study of a Graph Database Framework, Code**: Ran and tracked job performance of Giraph jobs on servers and wrote a conversion algorithm to convert the format of Large Network Graphs on SNAP into the JSON format accepted by Giraph.
- **F.A.R. Framework, paper**: Built a framework where the relation between entities is represented in the form of an adjacency matrix. Set relational operations are performed to extract relevant and accurate information in a timely manner.
- **Shopping Kart**: Designed a prototype of an e-commerce application with search functionality implemented using Trie Trees and next item purchase prediction using Priority Queues.

ADDITIONAL EXPERIENCE & ACHIEVEMENTS

- Talk proposal "*Short-Term Context based Fast Multilingual Acoustic Model for Low Resource Languages*" got accepted at Microsoft Machine Learning And Data Science (MLADS) Conference., 2020
- Awarded *Delight Your Customer, Azure Global Engineering*, for seamlessly completing the onboarding and migration of the Swachhbharat Mission platform on the Sangam Platform which received widespread media attention., 2018
- Winners at VMWare Global Relay Open Source Borathon across all global teams from VMWare., 2017
- Received *Academic Distinction Award* for exceptional academic performance for consistently scoring 9+ CGPA on a grade scale of 10, 2013-17
- Awarded the highest grade in course projects *Machine Learning* and *Natural Language Processing*., 2016
- Awarded *MITACS Globalink Award*, for carrying out a fully funded summer research internship at The University of Calgary for the year 2016.
- Won the Best Application Award at Ayana'15 (a 24-hour hackathon)., 2015
- Won the *Best Paper Presentation Award* at NCACCT'15., 2015
- Awarded *Certificate of Excellence* by CBSE for being among the top 0.1% of successful candidates of AISSCE 2013 in Computer Science, 2012
- Awarded *Certificate of Merit and scholarship* from KVS for securing a position in top 1.5% in AISSCE 2013 conducted by CBSE, 2012
- Represented the country as an *Indian delegate* during a fortnight long Exchange Program at Nagano and Tokyo as part of the *JENESYS Program* in Nov'11., 2011
- Extra curricular: Drummer Keyboard and Tabla player, Fitness Enthusiast, Traveler, Badminton player