Aditya Agarwal

skymanaditya1@gmail.com
Hyderabad, Telangana, India

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; 94.2 %	*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 works on the Bing's People Also Ask (PAA) experience which is, showing related questions and answers for a given user query. We aid the user in query exploration and reformulation.
  - I work on techniques to improve the coverage and relevance of Bing's PAA feature in existing markets. I also work on universalization techniques to expand our presence to more than 200 markets and 100 languages.

- **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.
  - Built an Azure Data pipeline to pull medical health records from on-premise healthcare systems to the cloud performing a series of pre-processing, de-identification and ingestion steps to store data in a secure and queryable format ensuring interoperability.
  - Worked on several data analysis techniques 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.
  - 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. to help us scale quickly and in customer acquisition.
  - Seamlessly onboarded the Swachhbharat Mission program to our platform which helped train 110,000+ municipal functionaries across 4000+ cities in India on best sanitation practices. The result was a partnership between Microsoft India and Ministry of Urban and Housing Affairs (MoHUA), Government India that received widespread media coverage, Link.

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 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 ensuring the highest quality of code 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.
  - Implemented several machine learning models to predict commonly occurring diseases in patients like Hypertension, Diabetes, Cardiovascular diseases given their medical history, symptoms, and lab tests, thereby assisting the doctor 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**: Developed a noise capture application to locate the source of a low frequency noise nuisance in the Ranchlands community of Calgary commonly known as the Ranchlands Hum.

* Developed an android based phone application to store and analyze low frequency audio data using techniques in digital signal processing to analyze and locate the source of the Ranchlands Hum.
  * Developed techniques to perform large scale calibration of android device microphones, code, paper.

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 designed to explore how online educational content and techniques in blended learning can be used for undergraduate education in India. MEC
      * I worked on automating several data retrieval tasks and providing insights into data with interactive data visualization techniques.
      * I worked on developing and deploying this platform for education in Mauritius called Virtual Campus which was launched as a *partnership between Microsoft Research India and Mauritius Institute of Education that received widespread media coverage*.

PUBLICATIONS

* **REED: An Approach Towards Quickly Bootstrapping Multilingual Acoustic Models**, *Spoken Language Technology (SLT '21)*, paper: State of the art speech recognition systems are built using sequential architectures based on RNN limiting the computational parallelization in training. This poses a challenge in terms of time taken to bootstrap and validate the compatibility of multiple languages for building a robust multilingual system. Architectural choices based on self-attention networks are made to improve parallelization but are inherently complex. We propose, Reed, a simple system based on 1D convolutions which uses very short context to improve the training time. To improve the performance of our system, we use raw time-domain speech signals directly as input.
* **An Approach Towards Action Recognition using Part Based Hierarchical Fusion**, *International Symposium on Visual Computing (ISVC '20)*, paper, presentation: 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 Bidirectioanl LSTM (HBLSTM) is used to model the spatio-temporal dependencies of the motion by fusing the pose based joint trajectories in a part based hierarchical fashion.
* **Minimally Supervised Sound Event Detection using a Neural Network**, *International Conference on Advances in Computing, Communications and Informatics (ICACCI '16)*, paper, poster: We propose a sound event detection system that is trained using a minimally annotated data set of single sounds to identify and separate components of polyphonic sounds using a Feed Forward Neural Network pre-trained using an autoencoder. Our system is able to achieve reasonable accuracy of source separation and sound detection with minimal training set.

PROJECTS

* **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.
* **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

UPDATES & PRESS RELEASE

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