Aditya Agarwal

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EDUCATION

Year of Completion	Course	Institute	CGPA / %
2017	B.E Computer Science and Engineering	PES Institute of Technology	9.25/10.0
2013	Class XII (Central Board of Secondary Education)	K.V. Delhi	94.2%
2011	Class X (Central Board of Secondary Education)	K.V. Delhi	10.0/10.0

ACADEMIC ACHIEVMENTS

Awarded the highest grade in **Machine Learning** and **Natural Language Processing** for course projects in **13CS369** and **13CS423** in 2016.
Awarded **MITACS Globalink Award** for a Summer Research Internship at **UofC** for the year **2016**.
Received **Academic Distinction Award** for exceptional academic performance in **14-15** and **15-16** academic session for consistently scoring **9+ CGPA** on a grade scale of 10.
Awarded **Certificate of Excellence** from **CBSE** for being among the **top 0.1%** of successful candidates of **AISSCE 2013** in **Computer Science.**
Awarded **Certificate of Merit** and **scholarship** from **KVS** for securing position in **top 1.5%** in **AISSCE 2013** conducted by **CBSE.**

ACHIEVMENTS

Won the **Best Application Award** at **Ayana ’15** (a 24 hour hackathon).
Won the **Best Paper Presentation Award** at **NCACCT ’15.**
Co-founded **Android Labs** - The Official Android Community of PES University.
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.**

INTERNSHIPS

Microsoft Research Labs — Research Intern
Bangalore, India — Nov ’16 – Present

Second Opinion
Mentored by Siddharth Prakash, Senior Research Program Manager, Microsoft Research

- Medical application platform connecting doctors and patients for providing **Second Opinion** on patients’ illness and health condition. The goal is to build a **machine learning** model that can analyze and automatically detect the onset of an oncoming serious illness / medical condition.

S.M.I.L.E. LAB — Research Assistant
University of Calgary, Canada — May ’16 – Aug ‘16

Sound Source Localization of an Urban Noise Nuisance – The Ranchlands Hum
Mentored by Dr. Mike Smith, Professor, Department of Electrical and Computer Engineering, UofC.

- Worked on a **Sound Capture Application** to store and analyze low frequency audio resembling Ranchlands Hum. Built **K-means, K-nearest neighbor, SVM** among other models to **classify** / **categorize** different types of hum noise nuisances.

- Performed **digital signal processing** on the recorded data computing its **Fourier Transform.**

Microsoft Research India Research Intern
Bangalore, India Nov '15 – May '16

Blended Learning in Indian Colleges with Massively Empowered Classroom

Mentored by Siddharth Prakash, Senior Research Program Manager, Microsoft Research and Naren Datha, Senior RSDE, Microsoft Research.

- Worked on Microsoft Research India's flagship project **Massively Empowered Classroom** which involved **performing URL Encodings** of user profile images, **automating data retrieval**, **providing insights into data** with **interactive data visualization techniques**.
- Deployment of an online educational content and techniques in blended learning platform for education in **Mauritius**.

Nokia Technologies Intern
Bangalore, India Jun '14 – Jul '14

Easy Pay

Mentored by Dr. A Srinivas, Director Nokia Developer Lab.

- Developed an **android** based phone application to **split bills** when group purchases are made among associates.

PUBLICATIONS

- *"Minimally Supervised Sound Event Detection Using Neural Networks"* (**2016 International Conference on Advances in Computing, Communications and Informatics**, **ICACCI** held at LNMIIT Jaipur, India), *IEEE Xplore Digital Library.* **Sept '16**
- *"F.A.R Framework – A binary framework where information retrieval is Fast Accurate and Relevant"* (**2015 National Conferences on Advances in Computing and Communication Technologies, NCACCT** held at SVIT Bangalore, India), *IJERT (International Journal)*. **Apr '15**
- *"Calibrating the Frequency Response of the Microphone of an Android Device" – Paper under Review.* **Feb '17**

PROJECTS

Parsing Actions with RNN (Recursive)
Jan '17 – Present

Action Recognition with Recursive Neural Networks
Mentored by Dr. S Natarajan, Professor, PESIT

Developing an action recognition system employing **Recurrent Neural Network** and **Convolutional Neural Network** for parsing spatiotemporal structure in video clips, for the task of **identifying a human action**. This model mainly tries to identify **complex actions** involving **multiple simultaneous occurring sub-actions**.

Sentiment Analyzer using RNN and CNN
Nov '16 – Dec '16

Sentiment Analysis using Bidirectional Recurrent Neural Network and Convolutional Neural Network
Mentored by Prof. Anantharaman Narayana, Professor, PESIT

Built a **bidirectional Recurrent Neural Network** and a **Convolutional Neural Network** to develop a **sentiment analyzer** for the **Stanford Sentiment Treebank dataset** for learning a 3 way (Positive, Neutral and Negative) and a 5 way (Very Positive, Positive, Neutral, Negative and Very Negative) classifier and evaluate their performance. **Visualization** of the Sentiment Tree Bank before annotation is done using the **Stanford coreNLP** parser and the visualization of after the annotation is done using the **NLTK parser**.

IPL Cricket Match Prediction
Nov '16 – Dec '16

Indian Premier League Cricket Match Prediction using Big Data Analytics
Mentored by Dr. K V Subramaniam, Professor, PESIT

Built a ball by ball simulation of an IPL match to predict the result of a match between 2 teams of the 2016 edition of IPL using techniques in **Big Data** like **HDFS Hive** for loading data, clustering bowler and batsman

statistics using **MLLib's** implementation of **K-means** cluster in **Scala** on **Spark** and Hadoop for running the simulation.

Elucidate
Jan '16 – Apr '16

Mathematics word problem generation of arbitrary complexity
Mentored by Dr. Viraj Kumar, Professor, PESIT

Devised a **grammar** to generate **Mathematics word statement problem** dynamically from a given system of non-singular equations. Built as a **pedagogical** tool for learning in India.

Sound Event Detection
Jun '15 – Nov '15

Multi-Label Neural Networks for Polyphonic Sound Event Detection
Mentored by Dr. Dinkar Sitaram, Director – Center for Cloud Computing and Big Data

A sound event 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 preprocessed using **Principal Component Analysis** and **Non-Negative Matrix Factorization**.

Apache Giraph – Case Study of a Graph Database Framework
Jan '15 – Apr '15

Comparing job performance of Nodes with Apache Giraph deployed on single node and multi node Hadoop cluster
Mentored by Dr. Dinkar Sitaram, Director – Center for Cloud Computing and Big Data

Ran and tracked **job performance** of **Giraph jobs** on servers and wrote a **conversion algorithm** to convert the format of **Large Networks Graphs on SNAP** into the **JSON** format accepted by Giraph.

F.A.R. Framework
Jan '15 – Apr '15

A binary framework where information retrieval is Fast, Accurate and Relevant
Mentored by Prof. Channa Bankapur, PESIT

Built a framework where the **relation** between the **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
Aug '14 – Nov '14

A smart e-commerce framework
Mentored by Dr. Srinivasa Murthy, PESIT

Designed a prototype of an **e-commerce application** with search functionality implemented using **Trie Trees** and next item purchase prediction using **Priority Queues**.

TECHNICAL SKILLS

Programming Languages: Java, C#, C, Python, MySQL, HTML5 and JavaScript.
Software and Utilities: MATLAB, Weka, Android Studio, GIT, Visual Studio, SQL Server Management Studio, Azure Storage Explorer.
Operating Systems: Windows and Linux.

AREAS OF INTEREST

Machine Learning, Natural Language Processing, Big Data Analytics, Computer Vision, Data Analytics, Software Engineering, Application Development, Signal Processing.