Anant Khandelwal

Personal Data

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Education

2016 - Present — Mtech in **Electrical Engineering**
Indian Institute of Technology, Delhi
Major field of study : Machine Learning, Deep Learning & Numerical Optimization.
Supervisor : Dr. Brejesh Lall and Dr. Lalan Kumar
GPA : 8.6/10

2017 — **Machine Learning Specialization - University of Washington**
Emily Fox, Amazon Professor of Machine Learning, Statistics
Carlos Guestrin, Amazon Professor of Machine Learning, CSE
Machine Learning Foundations: A Case Study Approach
Machine Learning: Regression
Machine Learning: Classification
Machine Learning: Clustering and Retrieval

2011 - 2015 — Undergraduate Degree in Electronics and Communication Engineering
B.I.E.T - Jhansi
Percentage : 83.9

2011 — Class XII at St. Queen Mary's Sr. Sec. School
Central Board of Secondary Education, CBSE
Percentage: 88.6

2009 — Class X at St. Augustine School, Agra
Central Board of Secondary Education, CBSE
Percentage: 85.83

Awards and Honours

2017 Ranked 52nd in **ACM India SIGKDD CODS 2016 Data Challenge** organised by the **ML India**.
2016 **ILP Kudos** during training at **Tata Consultancy Services** for the performance of highest order.
2014 Certificate for **highest performance** in Vocational training at **509, Army Base Workshop**.
2013 Won the Event **Quizzical** in literary event **Magnum Opus'13**
2013 Won the event **Circuitronix** in the Tech Fest **Techzion'13**.
2013 Won the event **Circuitronix** in the Tech Fest **Techzion'13**.
2008 Certificate of Honour - **Third prize** in **Maths Quest**.

Scholastic Achievements

2015 **HRD scholarship** for securing **696 rank** among **172000+ in Gate 2015**.
2012-2015 Received **Merit Scholarship** every year during undrgraduation.

Work Experience

2015-2016 **Tata Consultancy Services**
Supervisor: **Hanumantha Reddy , IT Analyst**
Award: **ILP Kudos** for performance of highest order.
Technologies: Unix, C++, Oracle

Build a complete fully functional utility billing system comprises the utility for a particular organization on which he can add his Utility through the admin login and customer can subscribe or unsubscribe the Utility for which their bills are generated on the yearly monthly basis whichever they adopt.

Using **Agile Methodology** the whole system is based on **MVC architecture**

Prepared the **Use Case Diagram**, **Entity Relationship Diagram** , **Class Diagram** , **Object Diagram** , **Sequence Diagram** on Gliphy

Code was done on the **UNIX platform** through the use of **C++ (OOP concept)** and interfacing through the ORACLE database was done using **PRO-C**

2016-2017 **Internship at Buzzlink**, *Stealth Mode Startup*
Supervisor: Raghav Bhagat, **Engagement Manager at Essex Lake Group**

Implemented the push notification functionality on both Android app which is like social networking based contact sharing and management app

Technology: Node.js, Firebase Cloud Messaging

App server is developed using **Node.js** in continous running mode when the user push the notification through the app it gets queried in the **FCM realtime database** then either before the timeout period it gets picked by app server or it pushes again after **exponential backoff delay** procedure.

Throttling logic and **Topic Messaging functionality** is also implemented.

M.Tech Thesis

Audio Zooming
Supervisor: Naresh Aggarwala, **Samsung Research Institute, Noida**.

- Aim is to "Zoom" or extract the speech from the desired direction while cancelling all other speakers in the spatial domain.
- **Dereverberation using Signal Subspace** and **GSVD based optimal filtering** is combined and developed modified GSC adaptive beamforming using **NLMS method**. Simulation is done to prove that this method is far better than in the current literature.
- Also **ICA** based **blind source separation** with Binary T-F Masking is used for both **convolutive mixtures** and instantaneous mixtures are used in iterative manner to separate as many as seven sources.

Major Projects

Handwritten Digit Recognition for Hindi Numerals.
Supervisor: Prof. Jayadeva, Electrical Engineering Department.

- Applied **Hu's Seven Moments Invariants(Affine), Chain Code Sequence and HOG** to extract features.
- Implemented digit recognition framework using **Convolutional neural netwrok, SVMs and Autoencoders**.

Autonomous Cleaning of Corrupted Documents
Supervisor: Prof. Parag Singla, Computer Science Department.

- Processed corrupted articles to extract features using **clustering, adaptive mean and median filtering**.
- Designed statistical model using **Regression, GBM, XGBOOST & CNN(lasagne)** to decorrupt documents.

Automated Trading System using machine learning algorithms

- Collected **2000+ files** of price data of **Cash markets, Future contracts, Index Prices NSE & Yahoo finance**.
- Features for **Return History, Momentum, Jump, Support features, categorical past trend** & assign labels.
- **Random Forest, Nearest Neighbor, XGBOOST, SVM & Naive bayes based trading strategy** are developed.

AI bot for Pacman

- Implemented DFS,BFS, A-star, Uniform Cost Search, heuristics for corner problem.
- Designed an AI Bot using an **Adversarial Search algorithm Expecti-Minimax**. Heuristics and **alpha-beta pruning** were used to reduce the depth of search.
- Implement **Q-learning** and **Approximate Q-learning** to train Pacman.

Social Network Community Recommendation based on Tag.-Stackoverflow

- Scraped 20GB+ of raw data related to Badges, Comments, PostHistory, PostLinks, Posts, Tags, Users Votes.
- **Multinomial Naive Bayes**, **TF-IDF based Similarity Ranking**, **Tag Affinity based Ranking Network properties** to recommend tags.

Full scale simulation of distributed hash Table.(DHT)
Supervisor - Prof. Smruti Ranjan Sarangi, Computer Science Department, IIT Delhi.

- Simulated a **PASTRY network** of 1000 nodes and 1 million search queries in JAVA
- Simulated a **CHORD network** of 100 nodes and 10,000 search queries in JAVA.
- Introduced **Node Failures and Insertions** and checked for stability and quality of the search query and verified it with theoretical results.

PARALLEL SUDOKU SOLVER IN OPENMP
Supervisor - Prof. Subodh Sharma, Computer Science Department, IIT Delhi.

- A parallel program was written in C++ using **openMP** to solve sudoku puzzle.
- Various **heuristics** were implemented to minimize the search space.

3-D BIKE RACING GAME
Supervisor - Prof. Subodh Sharma, Computer Science Department, IIT Delhi.

- In a team of three, a **one-player bike racing game** was developed using OpenGL in C++.
- It had a total of ten tracks, two playing levels, timer, points AND special bonus objects.

Positions of Responsibility

- Teaching Assistant in ELP-725 Software Lab.
- Organized Technical Event Circuitronix in Techzion'14.

Extra Curricular Activities

- Playing PC ganes,Playing Cricket,Football, Volleyboll.
- Represented whole school in shot-put in Moon Olympics.
- Open House poster presentation in 2017.