

Dhruvin Patel

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Education

2012-2017 Dual Degree (B.Tech + M.Tech) in Computer Science and Engineering
(Expected) Indian Institute of Technology, Delhi
CGPA - 8.29/10

Internship

May 2015 - Bidgely, Bangalore for Data Science Position

July 2015 *Bidgely is US-based startup Company which develops analytics to perform energy disaggregation.*

- **Vacancy Detection in HVAC running homes using electric consumption data:**
 - Built a prototype which will detect the scenarios when user of the house forgot to turn-off HVAC (Heating, ventilating and air-conditioning) before leaving in real-time based on home energy usage data. Modelled the problem as Supervised learning Binary Classification.
- **Detection of Cloth Dryer's Anti-crease cycle:**
 - Explored and implemented various signal processing techniques to detect the anti-crease cycle within given electric-consumption data with manually given signature-template.

Projects

- **Aspect Based Sentiment Analysis**

The goal was to identify the aspects of given target entities and also the sentiment expressed towards each aspect. The project is a task-4 of SemEval-2014. Implemented in Python using Scikit & NLTK library.

- **Action and Gesture Recognition using Kinect Sensor**

Built a Real Time Action and Gesture Recognition system in C# (Visual Studio) using Skeleton and Depth data from Kinect Sensor.

- **Sentiment Mining**

Built a sentiment categorization system using several Machine Learning Techniques for Tweets Data-set in Python. Also examined following:

- Filtering, stop words removal, data sparsity.
- Impact of performance on the size of training Data for different classifiers.
- Impact of different kinds of features addition such as unigrams/bigrams and others.

- **Named Entity Recognition**

Built a NER system using CRF for medical corpus that labels a given sentence as “disease”, “treatment”, or “other”.

- **Adversarial Search for Connect n-m-k**

Created two players for a Connect n-m-k game (similar to connect-4 game) one by implementing Minimax with alpha-beta pruning and other by implementing UCT algorithm using C++ and compared performance of the both.

- **Tower Allocation:**
Represented a Tower Allocation problem as Local Search and implemented in C++ Greedy Hill Climbing, Stimulated Annealing, Beam Search to solve the problem efficiently.
- **Graph Subset Mapping:**
Created SAT formulation and used Minisat (open source SAT solver) to solve Graph subset mapping problem.
- **Implementing a TCP protocol that improves throughput over a WiFi connection**
 - Implementing and testing TCP NewReno protocol at application layer using Java (and Socket Programming) to run over UDP.
 - Making small improvements in the protocol to improve throughput over a WiFi Connection.
- **Designing Dirt-Biking game using opengl**
Designed a fully functional 3D bike racing game in C++, using OpenGL library for Terrain and Object Rendering, a dedicated Physics Engine and Qt for user menu interface and implementing Database for maintaining High Scores.
- **Cloud Assignments:**
 - Checking fault-tolerance in Hadoop distributed file system and writing a Map-reduce job.
 - Familiarization with Openstack.
- **Freelance Projects:**
 - Designed dashboard for the Moovo's internal management using HTML, CSS, Javascript and RestAPI under Django framework.
 - Created a single page web application using Backbone.js for Sportzify.

Software Engineering Skills

- C, C++, C#, Java, Python, Matlab, R, MYSQL, PHP, HTML5, CSS, JavaScript, VHDL, Simple RISC (similar to ARM Assembly C), OCaml, SML, Perl, LaTeX.
- Hadoop, Openstack, Eclipse, Netbeans, Visual Studio, Qt

Scholastic Achievements

- Secured **All-India Rank 236** amongst more than half a million candidates in IIT Joint Entrance Examination, 2012 (**top 0.0472%**).
- Secured **180 International Rank** at International Mathematics Olympiad conducted among 7000 Schools across Asia.

Extra-Curricular Activities

- **Association for Computing Machinery:** Worked as Creativity Team Member in ACM-IIT Delhi.
- **Association for Computer Engineers and Scientists:** Worked at position of Social Media Secretary for ACES-IIT Delhi, a CS Departmental Society.
- **Dance and Dramatics Club Representative, BRCA IIT-Delhi (2013-14):** Served as Hostel Dance and Dramatics Representative for the year 2013-2014.
- **Hostel Tennis Captain, BSA IIT-Delhi (2013-2014):** Served as Hostel Tennis Captain for the year 2013-2014.
- Volunteered on regular basis at free Medical Aid Camps organized by **Manav Parivar** (an NGO) for a social cause.