GARVIT KATARIA
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EDUCATION

Vellore Institute of Technology, Vellore　　　　　　　　　　　　　　　　　　　　　　　Vellore, India
B.Tech. (Information Technology) | 9.32 CGPA (Up to 6th Semester)　　　　　　　　　　　**2017 – 2021**
Received Dean's Merit Award 2018, 2019

Delhi Public School, Mathura Road　　　　　　　　　　　　　　　　　　　　　　　　Delhi, India
CBSE Science Stream | 95% (Grade 12th) | 10 CGPA (Grade 10th)　　　　　　　　　　　　**2017**
Received The Scholar Award consecutively from 2009-2017

PUBLICATIONS

PDF Document Clustering and Performance Analysis using Spark in Multi-node Cluster (Link)　　**Mar – Aug 2020**
- Used RDD (Resilient Distributed Dataset) in Apache Spark, distributing the data over several nodes; Performed tokenization, stop word removal, and stemming for pre-processing before generating the normalized term frequency matrix
- Developed an algorithm for a distributed environment to find the optimal value of 'k' for k-means clustering algorithm using elbow method; Utilized 120 research papers from 7 domains to validate the model
- Submitted to Elsevier Natural Language Processing for Digital Library Management

Study for the Best Provisional Storage Technology (Link)　　　　　　　　　　　　**Dec – Apr 2020**
- Compared state of the art storage technologies for read-write speeds, storage space, feasibility, data retention time, power usage, and cost; Studied DNA storage in detail, analysed the problems, and suggested possible solutions
- Published in International Journal of Advanced Science and Technology on 28.08.2020

Augmented Reality in Brand Building and Marketing–Valves Industry (Link)　　　　　**May – Nov 2019**
- Developed an augmented reality application for the valves industry; Conducted a survey analyzing its effectiveness based on the attention it seeks, memory retention of product by the customer, brand knowledge discovery etc.
- Proposed and developed a novel way to take accurate measurements using augmented reality by taking 2.5-inch credit/debit card as a reference for measurement
- Published in IEEE 2020 International Conference on Emerging Trends in Information Technology and Engineering (ic-ETITE) on 29.04.2020

AWARDS AND ACHIEVEMENTS

Special Achievers Award and Merit Scholarship　　　　　　　　　　　　　　　　　**Sept 2020**
- Received special achievers award from the chancellor for exemplary co-curricular performance at various international events; Merit scholarship received for securing a position among top 10 students in the branch

HackOff v2.0 by MLH (Major League Hacking, Microsoft), Vellore, India　　　　　　　**Jan 2020**
- Won second prize for developing an application to improve prescription management and drug administration.
- Received special mention for best pitch and INR 50,000 in cash and kind

Yale Hack'19, Connecticut, USA　　　　　　　　　　　　　　　　　　　　　　　　**Oct 2019**
- Won the first prize of USD 1000 at Yale Hack for developing a live customer feedback analysis platform for airlines using ELK stack (Elasticsearch, Logstash, and Kibana)

HackYourReality by Accenture　　　　　　　　　　　　　　　　　　　　　　　　　**Sept 2019**
- Won third prize of INR 50,000 for developing an augmented reality app for Accenture products

INTERNSHIP EXPERIENCE

Noida Metro Rail Corporation　　　　　　　　　　　　　　　　　　　　　　　　　Delhi, India
Data Analyst Intern, Delhi-NCR Metro Rail Services　　　　　　　　　　　　　　**Sept 2020 – Present**
- Analysing CCTV footage at metro stations using neural networks and artificial intelligence to gather data about whether social distancing is being followed, percentage of people wearing masks, and number of people inside the station premises
- Locating hotspots where social distancing norms are broken frequently to prevent the spread of virus
- Working with Python and C++ to develop an end-to-end pipeline; Used Machine Learning API's to filter and select clips, where social distancing is not being adhered, from the longer video feed

Defence Research and Development Organisation　　　　　　　　　　　　　　　　　Delhi, India
IT Intern, Military Research and Development　　　　　　　　　　　　　　　　　　**Jun – Jul 2019**
- Surveyed, interviewed, and brainstormed to identify and list the requirements for developing an online hiring portal
- Developed an online portal for hiring interns, managing records, analyzing data, and automating tasks using JSP (Java Server Pages), Servlet, MySQL database, and Foundation framework; Reduced manpower requirement from 3 people to 1
- Automated the process of generating monthly consolidated statistics, provisional allotment letters, permission slips and certificates which were previously done manually; Reduced over 30 hours of manual work every month

Bitgrit Inc.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Delhi, India
Web Development Intern, AI Competition & Recruiting Platform for Data Scientists　　　　**Apr – Jun 2019**
- Worked as a full-stack web developer for development of a competition platform for listing ongoing competitions for data scientists where users can form teams, develop a solution, and compete for the prizes

- Made registration, login, profile, and live competition sections; Worked with React and Django, building an end-to-end pipeline, and optimized SQL queries, augmenting search time by 10%

PROJECTS (GitHub Link)

The Smart Pill Bottle: A Pill Management System Based on Touch-point Technology (Video Link)   **Nov – Mar 2020**
Aim: To identify the pill bottle by simply placing it on the phone's touch screen
- Designed conductive-ink stickers (imitating human finger-like touches) creating a unique pattern on the touch screen
- Developed a react-native application to decode the pattern and ascertain user medicine name, dosage, number of pills remaining, whether the particular pill has to be taken or not; Sent reminder alert to take medicine via push notifications
- Achieved a System Usability Scale (SUS) score of 85.94 out of 100 for 30 individuals
- Built using JavaScript, React and Google Speech-to-Text API and designed with Material UI

Machine Learning Based Adaptive Traffic Signal Timing Control   **May – Oct 2019**
Aim: To minimise waiting time of vehicles by finding optimal traffic signal timings and reduce the waiting time
- Developed an algorithm using Python to find optimal duration of traffic signals based on the traffic present at the junction
- Used a combination of deep learning (CNN) and reinforcement learning techniques (Q-learning) to adjust signal timers
- Trained and tested the model using SUMO (Simulation of Urban Mobility) simulator, showing 61.8% improvement from the traditional system of traffic light control

Car Price Prediction   **Mar – Aug 2019**
Aim: To determine the precise resale value for cars
- Scraped relevant data for a car such as manufacturer, model, variant, age, kilometers driven, fuel type, city, number of owners from top three car dealer websites in India (carwale.com, cardekho.com, droom.com)
- Standardized the data by eliminating extraneous information from the titles, replacing dissimilar jargon and homogenizing the structure of the data using regular expressions, data-type and range constraints
- Min-max scaler was used to normalize the data; Used univariate, bivariate, and multivariate analysis for feature selection
- Predicted car price taking weighted average based on the mean square error of three ensemble models - LightGBM, RandomForestRegressor, CatBoost; 90% predictions lied within 5% error and maximum predictions with no error
- Containerized the model using Docker and deployed as a web app using Flask on Heroku

VITspot - Multiutility Applications For VIT Students   **Dec 2018 – Apr 2019**
Aim: To solve the problem of finding commuting companions, study materials and roommates
- Built a cab sharing module for an in-school app where students can mention their travelling preferences and find an ideal match to share a ride
- Created the app using React Native Framework for front-end, GraphQL for querying, Amazon Web Services for deployment, and MongoDB database
- Started as a project for the course Mobile Application Development; 10000+ downloads on the PlayStore currently

TECHNICAL SKILLS

- **Programming (Expert)** – C, C++, Java, Python
- **Programming (Intermediate)** – JavaScript, C#
- **Database** – SQL, MongoDB

ONLINE COURSES

- Automata Theory (Stanford University)
- Machine Learning (Coursera)
- Operating Systems (Coursera)

EXTRA-CURRICULAR ACTIVITIES

Outreach Head, IETE-ISF Chapter   **Jan 2018 – Present**
- Organized a carnival for 100+ students showcasing their vision about smart cities
- Collaborated with MLH (Major League Hacking) and organized a 36-hour hackathon with 250 participants
- Managed Synergy – a tech symposium comprising of over seven workshops and participation of 1500+ students in total.
- Hosted 20 classroom sessions on trending technologies over the course of two years

Fundraising Volunteer, Eride NGO, Vellore   **Sept 2019 – Present**
- Organized 10+ virtual classes teaching basic mathematics to underprivileged students during the lockdown
- Set up stalls, organized games, competitions and sold posters during college fests to raise money for the underprivileged

Environment, Health and Safety Volunteer, NSS (National Service Scheme)   **Dec 2017 – Apr 2018**
- Led three awareness campaigns at public places emphasizing the importance of cleanliness, education and gender equality
- Taught basic English lessons at Don Bosco orphanage on weekends for 12 weeks

Workshops, VIT Vellore
- Gave an 8-hour workshop on Augmented Reality attended by over 250 students from various colleges in South India
- Conducted a free workshop on impromptu comedy attended by over 40+ youngsters