Shikhar Singh

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Education

Undergraduate | Bachelor of Technology | VIT, Vellore 2016 - 2020

- **Major**: Computer Science and Engineering
- **CGPA**: 9.23 (92.3%)

Research Interests: Data Mining and Analysis, Machine Learning, Databases

Relevant Work Experience

Systems Analyst at Wolters Kluwer - Global Business Services | Chennai, India Jan 2020 – Present

Projects:

SOP Legal Documents Intake Portal - Pandemic Preparedness and Digital Transformation

- Implemented 25 use-cases and enhancements into a customer-facing java application across 14 sprints impacting 58 US jurisdictions
- Designed a multi-cloud system architecture in AWS and Azure, facilitating a more secure Disaster Recovery strategy
- Designed the inclusion of OCR and Virus-scan use-cases to the system, supervised by the Principal Solution Architect of the firm

User Base Migration to a Central Account Management Portal

- Modified >35 use-cases for a portal to accommodate an influx of 115,000 new active users across Asia, North America, and Europe
- Implemented modules like Single Sign-On and Multi-Factor Authentication to strengthen application security

Initiatives:

- Designed and built an extensive reporting dashboard by analyzing real-time application logs and generating insights
- Researched and published a documentation on the Order2Cash process flow in SAP ERP System to facilitate SAP recruit training
- Led the knowledge-transfer sessions on enterprise systems, teaching system design, architecture, and workflows to new joiners

Research Internship

R&D Intern | Mphasis NEXT Labs | Bengaluru, India May 2019 – June 2019

Process Mining and Intelligence: User Journeys | Documentation

User Journey Analysis:

- Optimized query feedback times by theorizing the use of Graph DB as a better data store for join-intensive user journey data
- Conducted a successful proof-of-concept in the NeO4j Graph DB ecosystem demonstrating the improvements on query performance

User Journey Visualization:

- Performed comparative analysis on the visualization techniques in R, aggregating user flows into a single graphical representation
- Enhanced the visualization by introducing KPI indicators and animated edge traversal, thereby improving on the existing product

User Journey Prediction:

- Used random forest classification on a subset of data by the ICPM Conference, to predict users' next activity with an accuracy of 65%
- Remedied reduced feature importance of contextual variables due to label encoding, improving accuracy by a further 20%

Publication

Human Computer Interaction analysis on Game Developed in Python using Gesture Recognition | Paper Link Nov 2019

- Conducted a comprehensive GUI evaluation of an interactive game developed in Python using Gesture Recognition techniques
- Evaluated Nielsen's heuristics and conducted trials across age groups to study cognitive ability based on game performance

Academic Projects

Startup VIT – Ideation Platform | Project Link Mar 2019

- Created an online platform that facilitates campus startups in Ideation, Prototyping, Recruitment and Mentorship
- Onboarded 4 in-campus startups to leverage the portal in finding skilled recruits

Stock Closing Price Prediction | Project Link Apr 2019

- Used 10 years' worth of non-stationary time-series stock price data of top multi-national firms to predict closing prices
- Achieved highest predictive accuracy of 97% by comparing gradient boosting, random forest (bagging) and SVM regression models

Parallelized Shortest Path Algorithms using SIMD concept | Project Link Nov 2018

- Used OpenMP 4.0 and SIMD construct to parallelize the Bellman Ford and Floyd Warshall Single Shortest Path algorithms
- Studied running time and costs against the serial implementation, with better performance when count of nodes were high (>30000)

Skin Cancer Detection using K-means Clustering| Project Link **Nov 2018**

- Processed skin lesion images to determine if they are cancerous by evaluating Asymmetry, Border, Color and Diameter (ABCD rule)
- Used median filtering, K-means clustering, edge detection and feature extraction techniques in MATLAB to deduce results

Comparative Analysis - Path Planning Algorithms (RRT, RRT*, RRT*-Smart) | Project Link **Nov 2019**

- Used MATLAB simulations and demonstrated improvements of RRT* and RRT*-Smart in shortest path planning over RRT algorithm
- Drew conclusions on execution times, convergence rate and path quality given varying degrees of freedom and high dimensionality

Boolean Minimization using the Quine-McCluskey Algorithm | Project Link **May 2017**

- Developed a program in C to implement the Quine McCluskey Algorithm, finding the prime implicants of a Boolean expression
- Drew comparisons on its complexity and performance with the standard Espresso heuristic method used in industry

Retail Inventory Management System | Project Link **Nov 2017**

- Designed an application to perform stock management, purchasing of goods and provide sales reporting and analysis
- Explored web-development using MySQL, PHP, HTML5 and CSS stack to implement the application

Volunteer Experience

Student Teacher | CRY, India (Child Rights and You) | VIT, Vellore **Feb 2018 – Jan 2020**

- Taught the subjects English and Mathematics to orphaned children below the 5th grade in rural Vellore, Tamil Nadu
- Campaigned for greater awareness and conducted recreational events at orphanages near VIT Vellore Campus

Co-founder | Nirvaah | VIT, Vellore **Aug 2018 – Jan 2020**

- Started a campus initiative to empower rural women of Vellore to open shops and promote their products within campus
- Succeeded in promoting a canteen named “Mathi” within VIT campus, run entirely by women from the rural regions of Vellore

Extra-Curriculars

Director | Entrepreneurship Cell | VIT, Vellore | View Credential **Aug 2018 – Aug 2019**

- Built an ecosystem for the development of startups on-campus enabling 28 startups in fundraising and incubation
- Organized E-Summit 2019 - one of the largest entrepreneurship festivals, attended by around 2500+ participants from South India

Delegate | Reactor - Entrepreneurship Bootcamp | Kuala Lumpur, Malaysia | View Credential **Dec 2018**

- Selected to represent the college in an entrepreneurship bootcamp organized in Kuala Lumpur, Malaysia
- Won the prototyping contest by designing a peer-graded platform focused on upskilling teachers, ensuring higher quality of education

Convenor | Hacker Tech’ 19 | VIT, Vellore **Feb 2019**

- Conducted domain specific research on problem statements and mentored aspiring students in the ideation process
- Organized a campus-wide hackathon with the aim for students to convert projects into startups and receive incubation

Test Scores

- **GRE** - 325 | Quantitative Reasoning - 165 | Verbal Reasoning – 160 | Analytical writing - 4.5
- **TOEFL**- 116 | Reading - 29 | Listening – 28 | Speaking – 29 | Writing – 30

Skills and Certifications

Programming Languages, Tools and Concepts: Java, C++, Python, R, SQL, HTML, CSS, PHP, JavaScript, Splunk, Tableau, Cypher, AWS, Azure

Notable MOOCs Completed:

- Fundamentals of Digital Image and Video Processing | Northwestern University | Coursera |2018 | Certificate
- Cluster Analysis in Data Mining | University of Illinois Urbana-Champaign | Coursera | 2019 | Certificate
- Machine Learning | Stanford University | Coursera | 2019 | Certificate

Awards, Honors and Accolades

GV School Development Program Merit Scholarship | Vellore Institute of Technology | View Credential **Jul 2016 – Jun 2020**

- Rewarded scholarship across 4 years of UG study in recognition of VITEEE’16 rank (top 3.5%) and excellent academic performance

Chairman’s Award | Global Innovation Awards | Wolters Kluwer | View Credential **Dec 2020**

- Received the prestigious enterprise-wide Chairman's Award for digital transformation of a critical application during the pandemic

Gold Badge | Problem Solving | Hacker Rank | View Credential **Dec 2021**

- Earned a 5-star gold badge in Problem Solving accumulating a total of 860.37 points on Hacker Rank so far.

Winner | VIT Premier League, Soccer **Dec 2016 – Jan 2017**

- Won the inaugural VIT premier league soccer tournament out of a pool of 86 teams