SUMANYU GHOSHAL

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EDUCATION

Indian Institute of Technology Bombay *July 2018 - Present*
B.Tech. in Computer Science & Engineering (9.47/10)
Pace Junior Science College *July 2016 -May 2018*
Maharashtra Higher Seconday Certificate (92.92%)
Lokhandwala Foundation School *till May 2016*
Indian Certificate of Secondary Education (97.17%)

SCHOLASTIC ACHIEVEMENTS

2019 **Institute Academic Prize** for exemplary Academic Performance *IIT Bombay*
2019 **Changed Branch** to the Department of Computer Science and Engineering *IIT Bombay*
2018 **All India Rank 160**, JEE Advanced (Out of 160,000+ candidates) *IIT Kanpur*
2018 **Scored 396/450** in BITSAT Entrance Exam *BITS, Pilani*
2018 **Recommended for Scholarship for Higher Education**, INSPIRE *Govt. of India*
2015 **National Finalist**, Young Talent Search in Computer Programming *CSI*
2013 **Selected for Summer Studies**, Duke Talent Identification Program *Duke University*

EXPERIENCE

Prodigal Technologies LLC *Summer Data Scientist*
Voice Biometrics *April - July 2020*

· Developed a Siamese Neural Network-based model to generate similarity scores between audio clips
· Prepared a dataset by cleaning the speech obtained from a proprietary set of LDC Corpus (LDC97S62)
· Worked on feature generators for audio clips to feed in as inputs for Convolutional Neural Networks
· Used Transfer Learning to fine-tune the model for different clients to improve the client-wise accuracy
· Deployed the model into a readily usable internal-only API on an AWS platform that can categorize the audio clips with LOW/MEDIUM/HIGH outputs to classify if it is the same person speaking

Worxogo Solutions Pvt. Ltd *Remote Software Development Intern*
Nudge Automation *July - September 2019*

· Developed a program to automate timely reminders sent to the employees using python
· Implemented the program using the OpenPyXl for processing excel sheets and tkinter for GUI

PROJECTS

Face Recognizer and Autonomous Mapper Robot *Summer 2019*
Institute Technical Summer Project - 2019

· Developed a robot on Raspberry Pi 3B+ with a camera module and used GPIO pins to control motors
· Implemented a facial recognition subroutine based on the LBPH Algorithm using OpenCV in python
· Mapped regions by developing an algorithm taking the distances obtained from HC-SR04 sensors
· Programmed point-to-point shortest-path movements using the Wavefront Propagation Algorithm
· Successfully demonstrated a working model of the project at the ITSP Expo 2019

Semantic Segmentation for Road Detection *Summer 2020*
Self Project

· Implemented solutions for segmentation using the paradigm of Fully Convolutional Networks
· Used VGG-16 as an encoder and KITTI Road Dataset to train the decoder using Transfer Learning
· Compared and analysed FCN-8, FCN-16, and FCN-32 based Semantic Segmentation networks

Teaching Assistants' Selection Portal *June 2019 -*
Undergraduate Academic Council *January 2020*

· Worked as a Full-stack developer on the team of UGAC that created the Teaching Assistant's portal

· Designed the Front-End using HTML, CSS, javascript and bootstrap with datatables
· Developed the back-end with a MySQL database using the django framework on python
· Implemented a separate login app using REST principles to enable login using the institute's SSO

Splitwise Clone *Autumn 2019*
Prof. Amitabha Sanyal | Course Project
· Developed a django web app to automate the addition and splitting of bills amongst stakeholders
· Designed an SQL-based database in order to efficiently implement a feature to settle-up expenses
· Provided statistical insights on the expenditure made by users using javascript and highcharts

Dead-end Roads *November 2019*
Prof. Ajit Diwan | Course Project
· Designed an algorithm to determine the roads which lead to a dead end using the out-degree of nodes
· Developed a program in C++ to figure out the longest dead end in the graph with $O(n+m)$ time

Other Course Projects
· **Memory Management:** Developed an C++ program to simulate efficient memory management
· **Network Simulation:** Simulated FTP and CBR with WiFi and Ethernet as link layers using NS3
· **Spanning Tree Protocol:** Designed a simulator for the Spanning Tree Protocol in bridge topology
· **PCA**: Implemented Principal Component Analysis to represent images by 4 vectors on MATLAB
· **Character Repetition Counter**: Used a Finite State Machine on VHDL for character repetitions
· **Sudoku Generator**: Implemented the generator with a set of constraints using the Z3 SMT Solver

LEADERSHIP POSITIONS

Mentor, Institute Student Mentorship Program *July 2020 - Present*
· One of the 12 third-year students selected after rigorous rounds of interviews and peer-reviews
· Part of a 108-membered team aiming to play a facilitative, supportive and developmental role for junior students of the institute in their transition to college life and for their holistic development

Mentor, Department Academic Mentorship Program *June 2020 - Present*
· Assisting 4 sophomores to make the best out of the academic opportunities as a part of the department
· Part of the team maintaining the D-AMP blog to help students make well-informed decisions

Team Member, Alumni Student Mentorship Program *April 2019 - April 2020*
· Selected as a part of a team of 6 to steer ahead Student-Alumni Relations Cell's Mentorship program
· Co-ordinated with a mentor pool of 300+ alumni and a mentee pool of 500+ students
· Worked on making the handbooks for mentees to help them develop strong relations with their mentors
· Implemented Group Mentoring events and Workplace Visits (Shadow Program) for students to get exposure to the various industries and enable the development of a robust Alumni-Student network

TECHNICAL STRENGTHS

Computer Languages	Proficient in C++, Python, MATLAB | Familiar with Java, Prolog, VHDL
Libraries	Keras, Tensorflow, C++ STL, Numpy, Pandas, OpenCV, Z3
Web Development	Django, HTML, CSS, Javascript, REST, MySQL
Others	Bash, Git, NS3, Wireshark, Make, LaTeX, AutoCAD, Autodesk Eagle

EXTRACURRICULARS

2020 Contributed in the editorial on Research Fields in the department and the article on the interviews of Alumni in Non-Core Fields for the department newsletter Bitstream
2018 Worked on a team of 4 that designed the fastest Bluetooth-controlled car in XLR8
2015 Head boy of Lokhandwala Foundation School for the academic year of 2015-16
2014 Won the Horlicks Wizkids' Quiz Competition in the Mumbai City Round
2015 Runners up in the Association of ICSE Schools in Maharashtra's Regional-level Quiz
2015 Regional Finalist in Texas Instruments Science and Technology Quiz
2014 Regional Finalist in Tata Consultancy Services IT Wiz Mumbai round