

SUMANYU GHOSHAL

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EDUCATION

Indian Institute of Technology Bombay

July 2018 - Present

B.Tech. in Computer Science & Engineering (9.41/10)

Pace Junior Science College

July 2016 - May 2018

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

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

Copy on Write fork

October 2020

Course Project - Operating Systems

- Implemented a Copy on Write version of the fork() system call in the XV6 Operating System
- Developed other System calls like the total number of free physical pages, the number of virtual and physical pages in the user-space of program and the number of pages occupied by the page tables

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, L ^A T _E X, 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