

Piyush Onkar

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EDUCATION

Indian Institute of Technology Bombay

Bachelor of Technology in Computer Science and Engineering

August'21

WORK EXPERIENCE

Associate Software Engineer, XPO Logistics

(July'2021-Present)

- Worked on tools like **Google BigQuery** and **Google Data Studio** to analyze and visualize data
- Worked on Data Integration tool **Informatica** to integrate data from multiple sources to Data Warehouse
- Developed **Flask** application for displaying Data Models
- Developed **Selenium** scripts for scraping data from multiple websites
- Utilized **SQL** and **Python** to develop scripts which automated the process of creating, copying and maintaining views across multiple **Bigquery** datasets, thereby reducing manual intervention and increasing accuracy and productivity

Software Intern, MAQ Software

(May-July'19)

- Worked on localization of **Pehla Class** based on Onecourse, an award-winning educational **Android** application
- Developed Python scripts to automate application localization for supporting Hindi language
- Worked on the User Interface of the **CCI**, a learning Android application for children

Software Development Intern, GreatFour Systems

(December'18)

- Tested limitations of tools **PDFlib**, **Tabula** and **Camelot** for detection of tables in PDF file
- Designed an **OpenCV** algorithm for detection of tables in **Medical Leaflets**

Machine Learning Intern, SmartMedics

(May-July'18)

- Worked on developing a health assistant that uses real data, **Machine learning** and **Neural Networks** to predict the specialist a patient must consult based on the data entered by him
- Used **Python NLTK** library for **Natural Language Processing** to process the problem description entered by patient and extract important details from text
- Developed a **Django** based Web application for doctors

COURSE PROJECTS

Lip Reading for Word Classification

Computer Vision

Guide: Prof. Sharat Chandran

(Spring'21)

- Worked on making improvements in the accuracy defined by the model mentioned in this **paper**
- Added **word boundary detection** as an extra preprocessing step, reducing the problem into conditionally independent word prediction
- Made various changes in model pipeline and compared relative performance between them

Generate Image based on Text Caption

Natural Language Processing

Guide: Prof. Pushpak Bhattacharyya

(Spring'21)

- Developed a model to generate image based on text caption in the context of flowers
- Used the pretrained **BERT Transformer** for encoding the sentence and then generated images using **GAN**

Online Evaluation Web Application

Database and Information Systems

Guide: Prof. S.Sudarshan

(Autumn'18)

- Developed a **ReactJS** based web app providing features like viewing answer sheets and marks of exam to students and features like scanning and grading answer sheets to instructors and teaching assistants
- Integrated **SSO Login** of IIT Bombay in the app
- **Java Servlets** ran backend application logic on **Apache Tomcat** Server and **PostgreSQL** served as DBMS

Neural Networks Library

Artificial Intelligence and Machine Learning

Guide: Prof. Ganesh Ramakrishnan

(Autumn'19)

- Developed a deep-learning library from scratch, having modules of **Fully Connected Layer**, **Convolution Layer**, **Pooling layer** along with an appropriate loss function for backward propagation
- Used the built library to design a neural network architecture and tested it on **MNIST** and **CIFAR-10** datasets

Python based Electrical Circuit Simulator

Software Systems Lab

Guide: Prof. Kavi Arya

(Autumn'17)

- Developed a compact electrical circuit simulator using **Python** and **Jython** for creating a Java-based GUI
- Used functions from **SymPy** and **SciPy** to solve the differential equations
- Generated a graph between various parameters based on the input signals using **Matplotlib**

Compiler for a pointer language with C like semantics

Compilers

Guide: Prof. Uday Khedkar

(Spring'19)

- Implemented **lexical analyser**, **abstract syntax tree** and **symbol table** for effective translation to **assembly code**
- Provided support for boolean and arithmetic operators, nested conditional statements and function calls

Railway Signal Controller

Guide: Prof. Supratik Chakraborty

Digital Logic Design
(Spring'18)

- Implemented and simulated the model using **VHDL** with backend implemented on **C**
- Used **FPGALink** library for transfer of data via a USB cable between the host and the FPGA board
- Implemented **TEA encryption** to secure the messages sent over channel

Tetris Game

Guide: Prof. Amitabha Sanyal

Programming Paradigms
(Spring'17)

- Built a graphical game of **tetris** using the **Racket** programming language
- Implemented **heuristic algorithm** to hint the player which move should be played at each turn to reduce number of empty spaces in accumulated blocks
- Used teachpack **universe.rkt** to provide functionality for creating interactive and graphical programs

OTHER PROJECTS

Dogs vs. Cats Image Classification

Guide: Prof. Ganesh Ramakrishnan

Artificial Intelligence and Machine Learning
(Autumn'19)

- Implemented a **Multi-Layered perceptron** model and **VGG16** model in **TensorFlow** for classification of image
- Achieved accuracy of around **97%** for **VGG16** model and around **75%** for **Multi-Layered perceptron** model

Gravity Simulator

Guide: Prof. Amitabha Sanyal

Programming Paradigms
(Spring'17)

- Developed N-Body simulation of particles due to mutual gravitational force acting on them using **Racket**
- Implemented **Barnes-Hut** algorithm using list comprehension and trees to reduce the complexity of problem

MDP Problem

Guide: Prof. Ganesh Ramakrishnan

Artificial Intelligence and Machine Learning
(Autumn'19)

- Leveraged **Value iteration algorithm** to find optimal policy from a state in a Markov Decision Problem
- Used this solution of MDP to find the shortest path between two points in **deterministic and stochastic maze**

ACADEMIC ACHIEVEMENTS AND SCHOLARSHIPS

- Secured **98.98** percentile in **JEE Advanced** (IIT-JEE) out of **200,000** candidates (2016)
- Secured **Rank 226** in **MHT-CET** (Maharashtra Common Entrance Test) out of **400,000** candidates (2016)
- Recipient of the **NTSE** (National Talent Search Examination) Scholarship by N.C.E.R.T New Delhi (2014)
- Secured **All India Rank 40** in **International Olympiad of Mathematics** (2012)
- Secured **District Rank 1** in Maharashtra Talent Search Examination (2012)

KEY COURSES UNDERTAKEN

- **Machine Learning:** Artificial Intelligence & Machine Learning, Foundation of Intelligent & Learning Agent, Natural Language Processing, Computer Vision
- **Computer Science:** Data Structure and Algorithms, Wireless Networks, Database and Information Systems, Operating Systems, Implementation of Programming Languages, Digital Logic Design, Computer Architecture, Computer Graphics, Logic for Computer Science, Automata Theory, Abstractions and Paradigms for Programming, High Performance Scientific Computing
- **Mathematics:** Discrete Structures, Numerical Analysis, Linear Algebra, Differential Equations, Data Analysis & Interpretation

TECHNICAL PROFICIENCY

- **Data Analysis and ML:** Tensorflow, NumPy, Pandas, MATLAB, PyTorch, Google Data Studio
- **Programming Languages:** C++, C, Python, Racket, Java, Bash, Prolog, SQL, VHDL
- **Web and App Development:** Android Studio, React, Django, HTML, CSS, Javascript, Java Servlets/JSP, Flask
- **Softwares/Others:** Wireshark, ISE Design, AutoCAD, Git, \LaTeX , Spring Core, Informatica

POSITIONS OF RESPONSIBILITY

Mess Secretary | Hostel - 8, IIT Bombay

(August'17 - April'18)

- Elected by an electorate of about **400 hostel inmates** to mandate and maintain mess
- Responsibly optimized mess budget of **INR 8 million**

Services Coordinator | Mood Indigo, IIT Bombay

(May'17 - January'18)

- Executed **infrastructure** and **goods** need to make Mood Indigo a successful event
- Mobilized with **4+** event management companies and **15+** top decorators to bring best deal out of them

EXTRACURRICULARS

- Participated in **Kavyasandhya** General Championship (Inter Hostel poetry recitation competition) (2017)
- Completed an intermediate level **Bootcamp on Entrepreneurship** (2017)
- Successfully completed one year as a **Badminton** Player under National Sports Organization (2016-17)
- **Runner-up** in music video competition of Freshmen Cultural festival, IIT Bombay (2016)
- Volunteered in **Techfest CURED** campaign to increase awareness about Diabetes pan Mumbai (2016)