Parth SHAH

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EDUCATION

PES University, Bangalore | Bachelor's in Technology, Computer Science & Engineering | 2021 | CGPA : 8.99

Involvements	Stackoverflow Contributor	Subject Matter Expert, PESU I/O
Current Courses	Object Oriented Modelling and Design, Software Engineering, Algorithms for Information Retrieval, Social Network Analysis
Completed Courses	Data Structures, Design and Analysis of Algorithms, Advanced Algorithms, Operating Systems, Computer Networks, Database Management Systems, Linear Algebra, Machine Learning, Artificial Intelligence, Natural Language Processing, Introduction to Data Science, Web Technologies, Cloud Computing, Digital Design and Computer Organization, Microprocessor and Computer Architecture, Introduction to Blockchain Technology, Probability Modelling, Secured Programming with C
Languages	C/C++, Python, JavaScript, HTML/CSS, SQL, Solidity
Tools & Technologies	MPI, Pandas, Numpy, Tensorflow, Keras, Docker, AWS, React, Node, MongoDB, Django, Linux, Git, LaTeX

EXPERIENCE

Present
Aug 2020

Teaching Assistant, INTRODUCTION TO BIG DATA, CS&E Department, PES University, Bangalore
> Design, development and operation of an online assignment submission portal
> Submissions from 300+ students auto evaluated per assignment
> Secure, scalable and feature rich portal with unique tools for professors and students

July 2020
May 2020

Student Trainee, SYSTEM INTELLIGENCE, ON DEVICE AI, Samsung R&D Institute, Bangalore
> Research and Development of advanced machine learning solutions using deep learning
> Processing of raw handset camera images
> Solutions for improving (soft) user experience

May 2020
Jun 2019

Project Intern, SOLID STATE & STRUCTURAL CHEMISTRY UNIT, IISc, Bangalore
> Developed fast algorithms for computing general correlation functions
> High performance computing (scientific) and parallel computing
> Used the Message Passing Interface standard and employed other optimization techniques

Dec 2019
Jun 2018

Coding Division Head, THE ALCODING CLUB, CS&E Department, PES University, Bangalore
> Developed a portal (full-stack) for the activities of the CS&E department
> Used for assignment evaluation, contest ranking, online judging and codelabs
> Coordinated projects and hosted an inter-collegiate competitive coding contest with 50+ teams

Jul 2018
Jun 2018

Software Developer Intern, HEADRUN TECHNOLOGIES PVT. LTD., Bangalore
> Used the Django (Python) framework to build responsive websites
> Finance startup in Ireland, **PayLabs** and social media analysis in India, **Buzzinga**
> Integrated several third party solutions for existing projects to better enable sales teams

FORMATION

2017	Central Board for Secondary Education	National Public School, Koramangala	Vice Captain	96%
2015	Indian Certificate for Secondary Education	Sishu Griha Montessori & High School	Head Boy	94%

RESEARCH AND PROJECTS

INTERPRETING NEURAL NETWORKS, EXPLAINABLE ARTIFICIAL INTELLIGENCE (XAI)   AUG 2020 - PRESENT

Developing methods to convert black-box neural networks into an interpretable decision trees using Layerwise Relevance Propagation and perturbations by capturing relevance locality in the hidden layers. Methods are model and data agnostic.

PREDICTION OF THE PEAK, EFFECT OF INTERVENTION AND TOTAL INFECTED BY THE CORONAVIRUS DISEASE IN INDIA   MAR 2020 - APR 2020

Studied the effect of the coronavirus disease 2019 (COVID-19) in India using the SEIR compartmental model. Accepted for publication in the Disaster Medicine and Public Health Preparedness (Cambridge University Press) journal. Journal paper at this **link.**

NATURALIZATION OF TEXT BY THE INSERTION OF PAUSES AND FILLER WORDS   JAN 2020 - SEPT 2020

Developed a set of methods to naturalize text. Used the frequency of bigrams in the training data to make appropriate insertions and a Recurrent Neural Network to predict the next word that must be inserted in an input sentence. Resources are available at this **link.**

DATABASE AS A SERVICE   MAY 2020

Built a database as a service using Docker, RabbitMQ, ZooKeeper. High availability and scalability were ensured. The database served was of the NoSQL type (MongoDB). The service was deployed on AWS using EC2 instances. Resources are available at this **link.**

LISP MINI COMPILER IN C++   JAN 2020 - APR 2020

Built a mini compiler for Lisp (limited constructs such as if, for, while) in C++. High level Lisp code was converted to MIPS assembly level code by passing through three stages and an optimization stage. Resources are available at this **link.**

ANALYSIS OF FIBONACCI HEAPS   DEC 2019

Bench-marked a Fibonacci Heap against a simple Binary Heap. Simulation of process scheduling and implementation of Dijkstra's algorithm using both. Resources are available at this **link.**

PARALLEL IMPLEMENTATION AND BENCH-MARKING OF PRIM'S ALGORITHM   MAY 2019

Aimed to benchmark a parallel implementation of Prim's algorithm against a sequential implementation using OpenMP. Prim's algorithm finds the minimum spanning tree for a weighted, undirected graph. Resources are available at this **link.**

ETHEREUM SMART CONTRACTS IN SOLIDITY, VARIABLE LABS, BANGALORE   JAN 2019 - JUN 2019

Designed, tested and deployed smart contracts for an ERC-20 token and an escrow in Solidity. Test driven development of a universal exchange.

VERILOG STACK IMPLEMENTATION   NOV 2018

Implemented a stack data structure using Verilog, a Hardware Description Language (HDL). Resources are available at this **link.**

SUBJECT MATTER EXPERT, PESU I/O, PES UNIVERSITY   OCT 2018 - NOV 2018

Instructed a four week course on Source Control and Programming Principles as part of a unique peer-to-peer learning system, where students interact with Subject Matter Experts. Students were coached using group discussions and projects. Resources are available at this **link.**

Advertisement Free Radio, HashCode, Microsoft Innovation Lab   Nov 2017

Designed an application that overlays advertisements in a radio live stream of with the users' favourite tracks for uninterrupted listening. Won third place in a 24 hour hackathon.

Evaluation of Speech Engines for use in Air Traffic Control, EEE Department, PES University   Oct 2017 - Nov 2018

Evaluated Automatic Speech Recognition (ASR) technologies for adoption in Air Traffic Control simulators. Conducted research on pilot communication. Worked on state management and error handling and developed test cases. Conference paper at this **link.**

Awards, Extracurricular Activities and Volunteering

Awards

C.N.R. Rao Merit Scholarship - Top 20% (2019) | Sunanda Naganand Award for Best Outgoing Student (2016) | Vinay Uttappa Memorial Award for Best All Round Performance (2016)

Extracurricular Activities

Head of Finance - Model United Nations Society (2019) | Core Member - Epsilon Science Fest - PES University (2018) | Delegate - Model United Nations (2013-2018) | Robotics - FIRST LEGO League & Indian Robotics Olympiad (2013-2015)

Volunteering

Content Creator - Parikrama Foundation (2019) | Primary School English Teacher (Assistant) - BGMS Shishukunj Vidyalaya (2018)