ATHARVA SANDEEP VIDWANS
Flat No.201, Kalpataru Apts, S. no 1/11+1/23, Pinnac Colony, Karvenagar, Pune - 411 052, Maharashtra, India
Contact No: +91 8983372570, Email:atharvavidwans@gmail.com
LinkedIn ID - https://www.linkedin.com/in/atharva-vidwans-62739b169/
Medium ID - https://atharvavidwans.medium.com/
Github ID - https://github.com/Atharva-Vidwans
Website – https://atharva-vidwans.github.io/Website/

ACADEMIC QUALIFICATION

- Pursuing Joint AI and Quantum Program from IISc, Bangalore, 2021-expected completion in Jan 2022
- Completed QWorld Summer School from QWorld, 2021-2021
- Completed Introduction to Quantum Computing from IBM Quantum Qubit x Qubit, 2020-2021
- Completed Bachelor in Engineering in Mechanical from Pune Vidyarthi Griha's College of Engineering Pune (PVG COET), Savatribai Phule Pune University (SPPU), 2015-2019, CGPA: 8.63.

TECHNICAL SKILLS

- Quantum computing language – Qiskit, Penny Lane
- Other programming languages – Python, C, Cpp, MatLab, Arduino programming language
- Libraries in Python – OpenCV, TensorFlow, PyCUDA, NUMBA, PyDICOM
- Solid Modelling, Analysis and Medical Imaging Software – Solidworks, Inventor, ANSYS, Catia, Slicer3D

WORK EXPERIENCE

Research Intern, under Prof. Powel Gora from University of Warsaw, Poland, June 21 - Current
Objective: To develop a VQE algorithm with higher accuracy for finding the optimal solution to the CVPRTW.
Working on solving Capacitated Vehicle Routing Problem with Time Windows (CVRPTW) and tackle it using circuit-based quantum computing using Qiskit framework and VQE algorithm. The algorithm includes a Hybrid approach of Layered-VQE and Filtering-VQE combined with Conditional Value at Risk (CVaR).

Working Part-time as Subject Matter Expert in Advanced Mathematics for Chegg India I am working as a subject matter expert in Advanced Mathematics. Proficient in solving Linear Algebra, Differential Calculus, Probability. Learning new mathematics concepts.	Feb 21 - Current
Research Internship in Autonomous Robotics Surgery under, Rakesh Sharma Worked on the Medical Imaging part of the Autonomous Robotic Arm in modality of CT (Computed Tomography) and X-Rays for Image registration of real time images of CARM with the CT scans. Developed and optimized the algorithm for DRR (Digitally Rendered Radiographs) generation and reduced the execution time using Parallel Computing techniques in Python, like NUMBA and PyCUDA.	Feb 20 – July 20
Tata Consultancy Services (TCS) Experience in Virtual Reality development in Revit for environment generation in VR for medical applications.	July 19 – Dec 19
Volunteering Program 2019 Participated in volunteering in "Swachhata Hi Seva" organized by TCS. It was a great initiative to promote cleanliness and awareness against human impact on environment.	Sept 19 – Oct 19
Research Thesis on 3D printing of non-plastic material under, Prof. Manish Nagoshe I lead a team of 3 and was working on the programming part of the 3D printer for printing non-plastic material. Implemented various control logic on the microcontroller.	July 18 – May 19
Individual Research in Detection of Skin Tumor Developed a Machine Learning algorithm for detecting whether the cancer is benign or malignant. I learnt and implemented different ML techniques to increase the accuracy including various hyperparameter optimization techniques.	Jan 18 – June 18

AWARDS AND PUBLICATIONS

- Received an **Advance Digital Badge** in IBM Quantum Challenge Fall 2021(10th Nov 2021)
- Secured an **Advance Badge** in IBM Quantum Challenge Africa 2021(29th Sept 2021)
- Awarded an **Advance Badge** in Qiskit 2021 with a score of **rank 4 Globally**.(12th June 2021)
- Secured **4th position in** National Level **Qiskit Challenge India** organized by IBMQ in (16th Sept 2020).
- Published a chapter on '**Cognitive Computing in Autonomous Vehicle**' in collaboration with Dr. Mamta Mittal, in August 2021 in peer reviewed Elsevier Journal. (13th Aug 2021)
- Awarded **IBM Quantum Digital Badge** in 'IBM Q challenge 2020' conducted Globally(11th Dec 2020)
- Successful diploma holder of **QBronze** and **QSilver** in year 2021(Aug 2021)

PROJECT HIGHLIGHTS

a. Quantum Computing

- **Payoff Optimization using Quantum Amplitude Estimation (Sept 2021)** – This project aimed to find the optimum value of Payoffs in Options using QAE. I implemented the QAE algorithm for Options and executed it on Qasm Simulator. Classical systems use Monte Carlo sampling for payoff optimization, but this algorithm uses a QAE instead of Monte Carlo sampling utilizing Quantum advantage.
- **Formulating and solving crop yield QUBO problem (Oct 2021)** – Quantum Unconstrained Binary Optimization and Higher-Order polynomial Unconstrained Binary Optimization are widely used for solving various optimization problems. The project aimed to develop a quantum algorithm to formulate the crop yield problem using QUBO. I implemented the algorithm in Qiskit and solved it using VQE and QAOA on Qasm Simulator.
- **Lithium Hydride Molecule Simulation (Dec 2020)** – **F**inding the ground state energies of a molecule is a critical task in Quantum Chemistry. Thus, in this project, I used VQE in Qiskit to find the ground state energy of the LiH molecule. Visualization of decreasing ground state energy is shown using line graphs.

b. Computer Vision, ML and Robotics

- **Bionic Arm (Dec 2018)** - This project was based on the principle that electric impulse generated in our muscles causes muscle movement. This project aimed at developing a bionic arm that can be controlled using the impulses in the human body. This has significant application in the medical industry. My task was to program Arduino interfacing with EMG sensor and actuate the servo motors in the required fashion. From this project, I got experience in Arduino programming and interfacing sensors with the microcontroller.
- **End-to-End Learning for Autonomous Vehicles (Nov 2020)** – In the traditional approach, different Computer Vision tasks are implemented manually. Due to the manual intervention, there are chances of errors. Thus the primary target of this project was to reduce human intervention by implementing the End-to-End Machine learning technique. For this project, I collected data of LIDAR, ultrasonic sensors, and images from a vehicle simulation on track. Then build a machine learning model such that the input to the model is the series of images, and the model outputs the steering angle in degrees. This model is tested on the vehicle simulator. Video of the model in action can be viewed from my Github profile.
- **Classification of Exo-planets using Recurrence Plots and FFT (June 2021)** - The quest for finding life and habitat in the universe has been going on for a long. To uncover it, NASA's Kepler mission captured data of brightness of stars which are called light curves. This project aimed to analyze the light curves and improve the Exo Planets Classification accuracy using various ML models and preprocessing techniques like FFT and Recurrence Plots.

CERTIFICATION AND CO-CURRICULAR

Certificate in 'C language, July 2015

IBM Certification of 'Python for data Science, Dec 2019

IBM Certification of 'Introduction to Artificial Intelligence ', May 2019

'Artificial Intelligence' by TCS (Course ID: 51708), June 2019

Certification in Machine Learning by Stanford University by Andrew Ng, Oct 2019

'Introduction to TensorFlow for AI, Ml and Deep Learning' by deeplearning.ai, Sept 2019

'Convolutional Neural Networks in TensorFlow' by deeplearning.ai, Dec 2019

comofi MEDTECH

Date: - Nov 17, 2020

From:

Rakesh Sharma
Chief Technology Officer
Comofi Medtech Pvt Ltd.
Bangalore, India – 560064

TO WHOMSOEVER IT MAY CONCERN

It gives me immense pleasure to recommend Mr. Atharva Vidwans. He worked as an intern in our organization from 5th of Feb'20 to 31st of Jul'20. I was impressed with his sound knowledge and thorough understanding of both basic and advanced medical image processing principles since the selection process. Along with these, his curiosity to learn and humble attitude had made us choose him for the position from a wide pool of candidates. I was guiding him for the internship to build a software module for medical image analysis.

During the internship, he handled all the tasks given to him in a professional manner without missing any deadlines. His sincerity, hard-work, thoughtful planning and innovative approach to the problem statement were excellent. This internship required him to regularly upgrade his knowledge and he was never lagging behind. He has gathered a sound experience in image pre-processing, object detection, CT scan image analysis, projection mapping, linear algebra, and multi-processing. He has successfully implemented complex algorithms using python platform.

He possesses a strong inclination towards higher studies, and his aptitude and attitude are well suited for a graduate student. He has excellent written and verbal skills in English. His sincerity, perseverance, and self-motivation are very strong to help him through a graduate program.

Therefore, I strongly recommend Mr. Atharva Vidwans for pursuing graduate studies. I am certain that he will make the best use of the rendered opportunity. I wish him all the best for his future endeavors.

Feel free to contact for any further queries.

17/Nov/2020

Comofi Medtech Pvt. Ltd., Bangalore

Rakesh Sharma
Chief Technology Officer
Comofi Medtech Pvt. Ltd.
Bangalore, India - 560064