

Flat No.201, Kalpataru Apts, S. no 1/11+1/23, Pinnac Colony,
Karvenagar, Pune - 411 052, Maharashtra, India
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/>

Email: atharvavidwans@gmail.com
Contact No: +91 8983372570

To understand the real world applications, and implement the principles learned during undergrad and other courses.
Committed and motivated with decision making skills. Proficient at quick learning new procedures and technologies and a collaborative team player.

➤ EDUCATIONAL DETAILS

| Program | Duration | Institute | Grade |
|------------------------------|----------------|---------------------------|---------------|
| Joint AI and Quantum Program | 2021 - current | IISc Bangalore | Yet to appear |
| QWorld Summer School | 2021-2021 | QWorld | |
| Intro to Quantum Computing | 2020 - 2021 | IBM Quantum Qubit x Qubit | |
| Bachelor in Engineering (BE) | 2015 - 2019 | PVG COET, Pune | 8.63/10 GPA |
| 12 th Grade | 2014 - 2015 | KHS, Pune | 86.67% |
| 10 th Grade | 2012 - 2013 | P Jog High School | 88.36% |

➤ 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

➤ EXPERIENCE

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|---|-------------------|
| Research Intern under Prof. Powel Gora from University of Warsaw, Poland I am currently 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. Our algorithm includes a Hybrid approach of Layered-VQE and Filtering-VQE combined with Conditional Value at Risk (CVaR). Our target is to develop a VQE algorithm with higher accuracy for finding the optimal solution to the CVRPTW. | June 21 - Current |
| Working Part-time as Subject Matter Expert in Advanced Mathematics for Chegg India 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 Working 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) Worked on Virtual Reality development in Revit for environment generation in VR for medical applications. | July 19 – Dec 19 |
| Volunteering Program 2019 Experience 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 of 3D printing of non-plastic material under, Prof. Manish Nagoshe I was working on the programming part of the printer. 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 |
| Research in Retinal Optical Coherence Tomography under Dr. Naresh Jaiswal Developed a Machine Learning algorithm for detecting probability of cause of visual impairment and thus helping in avoiding it in the near future. Reached an accuracy of 95%. This can be widely reduce the precious time of ophthalmologist and cost effective to patients by preventing the disease instead of curing it. | July 17 – Dec 17 |

➤ AWARDS AND PUBLICATIONS

- Secured **4th position** in National Level **Qiskit Challenge India** competition organized by IBMQ in Oct 2020.
- Chapter publication on '**Cognitive Computing in Autonomous Vehicle**' in collaboration with Dr. Mamta Mittal, published in peer reviewed Elsevier Journal.
- I was awarded **IBM Quantum Digital Badge** in 'IBM Q challenge 2020' conducted globally.
- I was awarded an **Advance Badge** in Qiskit 2021 with a score of rank 4 globally.
- Successful diploma holder of **QBronze** and **QSilver**.

➤ OTHER PROJECTS

- a. Quantum Computing
 - Machine Learning Classification using PennyLane – Quantum Machine Learning is important in various application. It can be used for Image Processing to give better results and accuracy. Which is a requirement in Medical Industry. This algorithm written in PennyLane is an attempt to classify the given data with 3 classes using Variational Ansatz with higher accuracy.
 - Simulated Quantum Computation for molecular energies using VQE – This algorithm is developed in Qiskit for calculating the ground state energy for the given Hamiltonian. The Hamiltonian can be of any system. This algorithm calculates the ground state energy from the entered Hamiltonian.
 - Lithium Hydride Molecule Simulation – Finding ground state energies of a molecule is an important task in Quantum Chemistry. In this project, I have used VQE in Qiskit to find the ground state energy of LiH molecule. Visualization of decreasing ground state energy is shown using line graphs.
- b. Computer Vision, ML and Robotics
 - Bionic Arm - This project was based on the principle that electric impulse generated in our muscle causes the muscle movement. My task was to program Arduino interfacing with EMG sensor and actuate the servo motors in required fashion. From this project I got an experience in Arduino programming and interfacing sensors with the micro controller.
 - End-to-End Learning for Autonomous Vehicles – In traditional approach, different Computer Vision tasks are implemented manually. Due to the manual intervention there are chances of errors. This can be reduced if End-to-End Machine learning technique is implemented. In this algorithm, I have collected the data of sensors and images from a simulation of vehicle 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 model in action can be viewed from my github profile.
 - Classification of Exo-planets using Recurrence Plots and FFT- The quest for finding life and habitat in the universe other than earth has been going on since long. To uncover it, NASA's Kepler mission captured data of brightness of stars which are called light curves. Aim of this project is to analyze the light curves and improve the Exo Planets Classification accuracy for ML models using FFT and Recurrence Plots.

➤ CERTIFICATION AND CO-CURRICULAR

Certificate in 'C language '.

IBM Certification of 'Python for data Science'.

Certification in 'Control of Mobile Robots' by Georgia Tech University.

IBM Certification of 'Introduction to Artificial Intelligence'.

'Artificial Intelligence' by TCS (Course ID: 51708)

Certification in Machine Learning by Stanford University by Andrew Ng.

'Introduction to TensorFlow for AI, ML and Deep Learning' by deeplearning.ai.

'Convolutional Neural Networks in TensorFlow' by deeplearning.ai.

I do hereby declare that all the information mentioned above is true to the best of my knowledge.

Date – 03-09-2021

Place – Pune