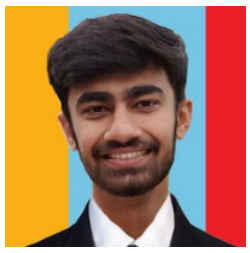

ABHIJAY ABHIJIT KEMKAR

Course : **B.E. (Hons.)**, Mechanical Engineering, 2022
Email : f20180519@pilani.bits-pilani.ac.in
Mobile : 9662062572
CGPA : 9.72

ACADEMIC DETAILS

COURSE	INSTITUTE/COLLEGE	BOARD/UNIVERSITY	SCORE	YEAR
CLASS XII	Navrachana School, Sama	CBSE	91.4 %	2018
CLASS X	Navrachana School, Sama	CBSE	10 CGPA	2016

Subjects / Electives	Linear Algebra, Computer Programming, Control Systems, Machine Learning, Machine Design, Differential Equations, Discrete Mathematics, Mechanisms and Robotics, Kinematics and Dynamics of Machines
Technical Proficiency	C Programming, Computer Vision, ROS, Python, Machine Learning, UAV, Control Systems Design, Robotic Systems, Tensorflow, Path Planning

SUMMER INTERNSHIP / WORK EXPERIENCE

Research Asistant, CRIS Central Electronics Engineering Research Institute **Aug 2020 - Present**

- Study and analyze **Machine Learning** algorithms for smart sensors like acoustic, strain gauges, and image processing and their use in the advancement of Structural Health Monitoring. Implemented **2nd order ODE** to find an alternative to NDT via the use of python in the **Linear Regression Model**.
- Developed the **model curvature** and **matrix curvature** analysis using Machine Learning.

Independant Researcher, Thynklogy **Jul 2020 - Present**

- Designed and Developed an Independent project which aims to develop a **path planning algorithm** that maximises the rate of detecting humans in an urban search operation.
- The drone plans a path in the 3D environment that can maximise the search outcome and, at the same time, avoid all obstacles in the least possible time via a primary camera, which uses **computer vision** to identify the structure of a human.

Machine Learning Intern, Plastic Water Labs **May 2020 - Jul 2020**

- Led the development of an application which understands the quality of an item based on an image provided via basic camera to identify if the part has defect in manufacturing via the use of **Digital Image Processing** and **Machine Learning Algorithms**.

Robotic Arm Programming Intern, Bombardier Transportations **Jun 2019 - Jul 2019**

- Used Machine learning Algorithms and CNC for **Robotic Arms** to Manufacture and detect defects in the shop floor bogey.

PROJECTS

Sudoku Solver - Computer Vision **Jul 2020 - Aug 2020**

- Created a sudoku solving application which scans for sudoku puzzle from the primary camera video, identifies the digits using **Image Processing** and **Computer Vision** and extracts them via a **CNN model** trained on MNIST database.
- Solves the sudoku via the **backtracking algorithm** and overlays the solution on the puzzle being scanned by the camera.

Finding Shortest Path for a 2 DOF Robot using Dijkstra and A* Algorithm - Computational Motion Planning **Mar 2020 - May 2020**

- In a 2-Dimensional 11×11 grid Configuration space consisting of obstacles, a Robot in the picture to be assumed following one step, a start point to an endpoint. This project aims to find and compare the path, as mentioned above, using the **Dijkstra** and **A* algorithm**.

Classification and Prediction of Land Buyers using Machine Learning Algorithms - Machine Learning **Feb 2020 - Mar 2020**

- The **Supervised Classifier** Machine Learning model uses Algorithms like **SVM**, and **Decision Trees** to predict whether a client would buy land based on the Dataset of age and Annual income of the buyer and thus classifying them into two categories, buyer and not the buyer.

Quadrotor Trajectories Planning and Control - Control of UAVs **Dec 2019 - Feb 2020**

- Design and implementation of a **controller** for a **3D quadrotor.** Tested the controller with two trajectories, the first one was a line trajectory and the second one was a more complex helical shaped trajectory.
- Designed a **trajectory generator** which outputs time parameterised trajectories which allows a quad-rotor to fly through pre-decided waypoints.

AWARDS AND RECOGNITIONS

Merit Scholarship | BITS Pilani **Aug 2018**
Institute Merit Scholarship, given to the top 3% students across all the departments of the university – 2018-2020

National Talent Search Examination | Govt. of India **Sep 2017**
Qualified for round 2 of National Level scholarship program in India to identify and nurture talented students. It honours and helps them by providing financial assistance.

National Runner up-Chess | FIDE **Aug 2013**
Played in chess Nationals in under 7 and under 9 age category and secured runner up in under 13.

VOLUNTEER EXPERIENCE

Cortex Technologies - Role: Neural Network Programmer and Designer | Cause: Science and Technology **Oct 2019 - Mar 2020**
Building a prototype mind assisted bionic arm with an integrated Neural network for AI functionality by connecting neurons to actuators so that mental impulses which will be transferred to Artificial neural networks are then transferred to linear actuators working as fingers

Student Faculty Council, BITS Pilani - Role: Student Representative, Mechanical Department | Cause: Education **Sep 2019 - Present**
Part of a 5 team body who is responsible for all forms of communication between the Professors of the Mechanical Department and the second year BE. Mechanical students by giving presentations and proposals to improve the reaching quality and communication between faculty and students.