Abhijay **Kemkar**

Budh 2123, Birla Institute of Technology and Science, Pilani, 3333031, India

📞 +91 9662062572 | ✉ f20180519@pilani.bits-pilani.ac.in | in Abhijay Kemkar

Education--

Birla Institute of Technology and Science, Pilani, Pilani campus   *Pilani, Rajasthan, India*
BACHELOR OF ENGINEERING (HONS), MECHANICAL ENGINEERING | CGPA: 9.77   *August 2017 - Present*

Navrachana School, Sama   *Vadodara, Gujarat, India*
SCIENCE | CGPA: 10 (X Standard) PERCENTAGE: 91.4 (XII Standard)   *April 2016 - August 2018*

Work Experience--

CSIR Central Electronics Engineering Research Institute   *Pilani, Rajasthan, India*
RESEARCH ASSISTANT   *August 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.

Thynklogy Innovation & Research Centre   *Silicon Valley, California, USA*
INDEPENDENT RESEARCHER   *June 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.

Bombardier Transportations Pvt ltd   *Vadodara, Gujarat, India*
ROBOTIC ARM DEVELOPER INTERN   *June 2019 - July 2019*

- Used Machine learning Algorithms for Robotic Arms to Manufacture in the shop floor bogey.
- Evaluated the plant and Designed an Automated Electromagnetic Handbrake system.

Plastic Water Labs   *Bangalore, Karnataka, India*
MACHINE LEARNING INTERN   *May 2020 - July 2020*

- To identify if the part defect in manufacturing using images from basic cameras via the use of Digital Image Processing and Machine Learning Algorithms.. Developed an application on android to scan images of objects/goods to identify a defect in them.
- Used AR software unity to design implementation of ml agents to detect defects based on a dataset of defective items

Technical Strengths---

Programming	C, Python, Matalb
Game Development	Unity, Game Maker:Studio
Computer Graphics	Adobe Illustrator, Blender, Adobe Photoshop
Machine Learning	OpenCV, Numpy, Scikit-learn, Pandas, Jupyter, Spyder, IBM Watson.

Projects---

Quadrotor Trajectories Planning and Control   *Independent Project*
CONTROL FOR UAVs   *December 2019- February 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 krajectory.
- In addition, designed a trajectory generator which outputs time parameterized trajectories which allows a quadrotor to fly through a pre-decided set of waypoints.

Shortest Path using Dijkstra and A* Algorithm
Independent Project
COMPUTATIONAL MOTION PLANNING
March 2020- May 2020

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

Classification and Prediction of Land Buyers using Machine Learning Algorithm
BITS Pilani
APOGEE 2020
March 2020- May 2020

- The 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.
- This is a case of supervised learning where the algorithm is first trained on a set of clients pursued in the past years.

Sudoku Solver
Independent Project
CNN AND BACKTRACKING
June 2020- August 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 the MNIST database.
- Solves the sudoku via the backtracking algorithm and overlays the solution on the puzzle being scanned by the camera.

Relevant Courses---

Machine Learning (online certification)

Computer Programming in C

Digital Image Processing (online certification)

Computer Graphics & Design

Aerial Robotics (online certification)

Probability & Statistics

Computer Vision (online certification)

Kinematics and Dynamics of Machines

Positions of Responsibility--

Cortex Technologies
BITS Pilani
BIONIC ARM NEURAL NETWORK PROGRAMMER
March 2019- May 2020

- Building a prototype mind assisted bionic arm with an integrated Neural network for AI functionality.
- Connecting neurons to actuators so that mental impulses which will be transferred to Artificial neural networks are then transferred to linear actuators forking as fingers.

Department of External Affairs
BITS Pilani
APOGEE, BITS PILANI
August 2020- Present

- Worked as Logistics Head for a department under the Apogee charter working to increase the outreach of BITS Pilani's Annual technical festival, Apogee.
- Conducts a pan India olympiad called Aarohan for the students of classes 9-12.
- Also conducts mini-fests in colleges across India in order to increase the footfall of APOGEE.

Student-Faculty Council
BITS Pilani
STUDENT REPRESENTATIVE
January 2020- 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.
- Gives presentations and proposals to improve the reaching quality and communication between faculty and students.

Mechanical Engineering Association
BITS Pilani
APOGEE, BITS PILANI
October 2019- Present

- Works to conduct events such as Robowars and FTGP on the Annual Technical Festival of BITS.
- Also Participates and builds Robots and Remote controlled IC Engine cars.

Extracurricular Activities---

- Came up with innovative ideas to intrude Matlab and Autocad to Kinematics and Dynamics of Machines course.
- Presented the innovations by cortex to Prof.Bijoy Kumar Rout, HOD Robotic systems, BITS Pilani.
- Vice Captain of the BITS Pilani chess team. Secured silver medals in BOSM'18 and BOSM'19.
- National level chess player in Under 7, Under 9 and Under 13 age category.
- NTSE round 2 scholar.