Vaibhav Raheja

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Education

University of Illinois Urbana-Champaign, *Master's Degree* 08/2023 - 12/2024
Major: Autonomy and Robotics CGPA: 3.77/4

NMIMS' MPSTME, *Bachelor's Degree* 07/2017 - 06/2023
Major: Computer Engineering CGPA: 3.18/4

NMIMS' MPSTME, *Diploma Certificate* 07/2017 - 06/2023
Major: Computer Engineering CGPA: 3.18/4

Work Experience

Intelligent Motion Laboratory, *Research Developer* 08/2023 - 12/2023

- Implemented FaceMesh, OpenFace 1.0, and DeepFace for face detection for a robotic eye exam.
- Developed head pose estimation techniques using ZED camera's depth tracking of facial features.
- Analyzed FaceMesh and OpenFace 1.0 face detection models for accuracy and adaptability in various scenarios.
- Designed and simulated a robotic arm, optimizing camera placement for effective 3D mapping.
- **Technologies Used:** Python, Robot Operating System (ROS), CAD.

All India Institute of Medical Sciences (AIIMS) Hospital, *Research Intern* 02/2021 - 05/2023

- Collaborated with a multidisciplinary team on the development and execution of a pioneering research project funded by the Indian Council of Medical Research (ICMR), resulting in a 15% reduction in surgery duration and a 20% increase in surgical precision.
- Played a pivotal role in the design and assembly of a custom 2-directional catheter and mouthpiece integrated with a camera system, contributing to successful intubation.
- **Technologies Used:** Python, 'xArm 5' robotic arm, Machine Learning, Robot Operating System (ROS), CAD.

Granuler: CIO Consulting, *Intern* 01/2020 – 05/2020

- Successfully implemented a CRM (Customer Relation Management) system using HubSpot CRM, streamlining workflow and increasing efficiency by 40%
- Automated CEO's tasks using UiPath for Robotic Process Automation (RPA), resulting in at least 20% saving in resourses.

Projects

Intelligent Ground Vehicle Competition (IGVC), | (*ROS, OpenCV,PID Control,Path Planning,CAD*)

- Managed a multidisciplinary team as Co-Captain for this international robotics competition held in Detroit, USA. As Co-Captain of Team D.A.R.V.I.N, we achieved impressive 2nd and 3rd place rankings in the highly competitive Cyber and AutoNav Challenge categories, demonstrating our excellence in autonomous vehicle navigation in challenging environments.

Autonomous Driving Car | (*Python, Pytorch, CNN*)

- Achieved an accuracy rate of over 90% in predicting chronic diseases, including COVID-19, Pneumonia, Heart Disease, Chronic Kidney Disease, Diabetes, and various skin diseases. This system holds the potential to revolutionize early disease diagnosis.

Soft Robotics Hand | (*Arduino, 3D Modelling and Printing*)

- Developed a Soft Robotic Hand controlled by five individual stepper motors, enhancing dexterity and flexibility, with Arduino for control and 3D modeling and printing for construction.

Custom Surveillance Drone | (*Arduino, 3D Modelling and Printing, ESC Controller, Pix hawk*)

- Engineered a custom surveillance drone featuring a modular 3D-printed body and high-performance 1200KV BLDC motors, controlled via a Pix hawk Flight Controller and an ESC for motor control.

Skills

Programming: Python, C++, Robot Operating System(ROS), OpenCV, PyTorch, PID Controllers, Motion Planning algorithms, Machine Learning(ML), CNN

Tools: Autodesk Fusion 360, Computer Aided Design (CAD), Linux, Git, Arduino, Raspberry Pi

Publications

Raheja, Vaibhav et al. (Nov. 2022). "Multi-Disease Prediction System using Machine Learning". In: *International Conference on Futuristic Technologies (INCOFT)*. URL: https://ieeexplore.ieee.org/document/10094382.