Muhammad Abubakr

Electrical Engineer | Computer Vision Research Assistant

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Motivation

Electrical Engineering student with a drive for excellence. Interested in gaining experience related to business development, robotics, computer vision, data science, and optics. Looking for an opportunity to gain experience and polish my skills.

Education

BS Electrical Engineering   Sep 2018 - Jul 2022
Institute of Space Technology, Islamabad

Intermediate (Grade 11 and 12)   Apr 2016 - Jun 2018
Punjab College of Science, Blue Area, Islamabad

Matric (Grade 9 and 10)   Apr 2014 - May 2016
OPF Boys College, H-8/4, Islamabad

Employment

Research Assistant   Aug 2022 - Mar 2023
Spark Games Studio, Islamabad

The task was to create a mobile phone-based system to track the cricket ball and calculate the delivery's speed and spin. I completed this work by collecting information about cricket balls, and manually labelling them with certain tools to speed up the process. After that, I worked with YOLOv3 weights and discovered that it was ineffective on mobile devices when used in real time. I, therefore, moved to YOLOv4-tiny after doing some study. After training its weights, I tested it using test datasets, and the results were fairly decent. Before putting it to the test, I went through the procedures of camera calibration and pitch detection to determine the precise pitch length, which was necessary to calculate the delivery speed. The results were quite promising but needed some improvements.

Internships

Intern AI Engineer   Nov 2021 - Dec 2021
iVision Lab, Institute of Space Technology, Islamabad

- Stereo camera calibration using OpenCV and conversion of .SVO files to .png images
- Semantic segmentation of.png images (using MobilenetV2)
- Using CARMAP to make maps and creation of diff and stitch

Personal details

Date of birth
December 21, 2000

Nationality
Pakistani

Website
sites.google.com/view/muhammad-abubakr/home

LinkedIn
linkedin.com/in/abubakr9726

Github
github.com/abubakr9726

Skills

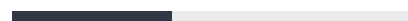C++

Python

Machine Learning

Computer Vision

Circuit Designing

C#

Languages

English

Urdu

operations to make universal maps
- Using DBSCAN to extract car positions

Intern Engineer   Nov 2020 - Dec 2020
Robotics World (PVT) Ltd., Karachi
- Prepared manuals/data sheets, and designed experiments for the robotics kits.

Senior Design Project

Reusability of 3D Feature Based Maps for   Jul 2021 - Jun 2022
Automobiles
The proposed model uses a stereo camera as a sensor with ORB feature detection and SLAM algorithm to create a universal 3D map of the environment that can be t the environmental conditions, unlike normal 3D maps that can only be used for that specific environmental condition, thereby increasing the accuracy of the localization. The system was embedded with a self-made conventional algorithm that aimed to accurately identify the number of cars present before and not present now with their positions and vice versa. The whole system, with some amendments, can be used by AV industries to help them develop their autonomous vehicles.

Commercial Project

Automatically Web Form Filling System   Dec 2022 - Feb 2023
Selenium, one of the leading open-source web automation tools, offers a single interface that enables you to create scripts in several languages. However, for this project, python was used. The script works by first sending the email to get the sign-in page. The script sends the email to a server that authenticates it and then sends the log-in page as a response back to the script. After that, Selenium sends the username and password along with the form and entries, which has to be filled in form back to the server and shuts down the connection.

Certificates

ICUBE CSAT CLASSROOM SATELLITE   Feb 2022
Designed ICUBE CSAT structure and internal control system and performed analysis on simulation

Extracurricular activities

Module Manager   Oct 2019 - Oct 2019
World Space Week 2019, Islamabad
Managed a water rocket event at the Institute of Space Technology in which all the schools and colleges of Islamabad participated.

Software Skills

Proteus Professional

Pycharm

Microsoft Visual Studio Code

Microsoft Visual Studio

Wireshark

MathWorks MATLAB

Hobbies

- Bike Riding
- Hiking

References

References available upon request.