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RAHUL AREPAKA

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EDUCATION

Ecole Centrale School of Engineering, Mahindra University, India *Oct 2020 - Exp. June 2024*
Bachelor of Technology in Computer Science and Engineering *SPA: 7.53 /10.0*

Our Own High School, Al Warqa'a, GEMS Education, Dubai *April 2010 - March 2020*
Science Stream with Computer Science - CBSE *Percentage: 82.3%*

RELEVANT EXPERIENCE

Center of Excellence Artificial Intelligence and Robotics *Dubai, United Arab Emirates*
Project Lead and Lead Programmer June 2021 - July 2021

- Designed a dashboard for Renault Twizy Self Driving Car at the GEMS DAA which unlocks the car using facial recognition and can add multiple faces and syncs google maps and music player based on facial recognition.
- The dashboard also can automatically start the car using Arduino and Relay based upon facial recognition using a Bluetooth module.
- This project was a collaboration with GEMS DAA, Center of Excellence Artificial Intelligence and Robotics.

FarmBot, Inc *Dubai, United Arab Emirates*
Project Lead and Lead Programmer April 2021 - June 2021

- Designed a laser mount for the FarmBot kits which detect weeds by using weed detection computer vision and gives the coordinates and then kills the weeds precisely using 500mW laser connected to the Farmduino, Arduino, and Raspberry Pi.
- This project was a collaboration between FarmBot Inc (an Open-source organization) and GEMS DAA, Center of Excellence Artificial Intelligence and Robotics.

Team UAE - World Robotics Olympiad *Dubai, United Arab Emirates*
Team Leader and Lead Programmer March 2018 - December 2018

- Designed and worked with various microcontrollers and single-board computers and developed a cable suspended robot for agricultural farms and high-tech greenhouse farms and solved soil compaction crisis in farming lands and raised AED 60,000 in funding.
- The project also included onboard computer vision to detect various plants and precisely perform farming and was presented at the World Robotics Olympiad, UOWD, and MURS.

SELECTED PROJECTS

Co-Axial Drone – Increase Flight time January 2021 - Present

- Created a 3D rendering of the Coaxial drone using Autodesk Fusion 360 and designed the battery layout using 18560 batteries.
- This project is part of the Babson Build Challenge and makes the prototype to increase flight time up to 80 mins and use solid-state batteries instead of lithium-ion or lithium polymer-based batteries for environmental and safety purposes.

Project Cyclops - Laser Killing Weeds Module April 2021 - June 2021

- Created a Laser Module for FarmBot Genesis as a Proof of Concept where the onboard camera would detect the weeds in the farm and call the locations of the weeds using API and precisely go to the location, calculate the offset, and power the laser to kill the weeds. This reduces mechanical movement, a faster and more efficient way to destroy weeds from farms.
- This Module would roll out to all the farmbot consumers in 2023 (Expected).

Mask with Temperature Detection April 2020 – September 2020

- Used OpenCV to detect mask and to detect temperature from the thermal sensor from the Arduino using

multithreading and communication with python code and Arduino over a web-based interface using Dash in real-time

- It updates the google sheets using the Google API with information such as temperature, mask status, and picture and also controls the relay from the Arduino which can be used at the controlled entrance access and school buses and takes input such as QR and Barcode to identify and store the readings of a particular person to improved data analytics

Alcohol Detection Dashboard November 2019 – January 2020

- Used MQ3 sensor to detect alcohol consumption level from the smell of the breath and computed using the Arduino Mega.
- Upon detection and checks the level of consumption and locks the engine before starting the vehicle and sends SMS to the close contacts using the GSM sensor and onboard sim card.

Waste Promotional Card Collector [E=MC2] July 2019 – August 2019

- Created an Arduino based machine using motor and 3D printed geared mechanism to collect cards in exchange for reward points
- This project is made to tackle littering and also attached a camera to compute the classifier to detect certain types of cards and it was featured in Khaleej Times, Arabian Radio Network, Dubailand, LovinDubai, Mashable, and ArabicUK and interviewed by Khaleej Times and few popular Radio stations such as City 1016 and Dubai Eye 103.8.

Cable Suspended Robot – Clara | Dolly May 2018 – January 2019

- Created a 6 Degree of Freedom robot controlled by stepper motor using custom gear ratio and controlled using multiple types of microcontrollers over 12C Protocol and the movement is computed using the distance formulae.
- This project is made to be used in the Agriculture field to tackle the social compaction issue and presented at the World Robotics Olympiad and Mahindra University Research Symposium and used as proof of concept for a shipping company based in UAEwhich is used to clean large shipping containers.

AgriBot – Companion February 2018 – May 2018

- Created a land-based robot controlled using ev3 as the master and Arduino connected to soil moisture sensor and pH sensors to read and send the values to the master for computation
- The robot also has a camera connected to raspberry pi and detects plants, colors, and weeds using the haar cascade classifiers in OpenCV programmed using Python and also has a magnetic module that automatically swaps the module based on the agriculture operation.

HONORS AND AWARDS

- **Finalist** for Global Babson Collaborative challenge – Bachelor's level (**Top 10 Teams**).
- **First Place** at **Mahindra University Research Symposium 2020.**
- Granted **Think Award** at **FIRST Tech Challenge** at American University Sharjah 2019.
- **Represented UAE** in the **Finals of World Robotics Olympiad 2018** at Thailand in Nov-2018 and our UAE Team "Emergence" was **ranked 14th in Open Category Seniors**.
- **1st Place** in Open Category Seniors at **National Robotics Olympiad 2018** (UAE Chapter) under the theme "Food-Matters".
- **1st Place** in Technobizz Business Challenge at **Winchester School, Jebel Ali, Dubai**.
- **1st Place** in Open Category Robotics Demonstration 2018 at **University of Wollongong, Dubai.**
- **Mentor** and **Judge** at the FIRST Lego League – National Level 2020 and 2021.

POSITIONS OF LEADERSHIP

- **Team Leader and Drone Designer:**
  - Global Babson Collaborative challenge – Bachelor's level 2021.
- **Logistics Team** at TEDx MahindraUniversity 2020.
- **Innovation Captain** and **Student Council** (2019-2020) at OOW, Dubai.
- **Head of AI BootCamp** at OOW, Dubai 2019.
- **Team Leader and Lead Builder/Designer**:
  - Team Emergence for **World Robotics Olympiad 2018**

    - Team Phantom for **FIRST Tech Challenge 2019**.
- **Student Supervisor** (Student SLT) on September 5th at OOW 2019.
- **Head of On-Site Production** at TEDxYouth@OOW 2019.
- **Head of Logistics** of OOW-MUN 2019 at OOW, Dubai.
- **Head of IT** at Teachers Day 2018 and Exodus Farewell 2019 at OOW, Dubai.
- **Head of Innovation Club** at OOW, Dubai 2019.

SKILLS

Programming Languages:	C, C++, Python.
Operating Systems:	Linux, Windows, WSL.
Technical Tools:	Arduino, Raspberry Pi, OpenCV, Autodesk Fusion 360, Git, VS Code, Image Processing, IoT, NodeMCU.
Interests :	Robotics, Reverse Engineering, Product Engineering, Rapid Prototyping, Hardware Hacking, Product Innovation

NOTABLE COURSEWORK

- Computer Science (C Language and Python), Enterprises and Economy, Electronics, Physics, Engineering Drawing, Thermodynamics, Mathematics, Environmental Science, Humanities, Professional Ethics, French.

ORGANIZATIONS

- World Robot Olympiad, Babson Build Challenge, MU Hult Prize, FIRST Tech Challenge, Hacktoberfest, TEDx.