THARUN VADAKKE PUTHANVEETTIL

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EDUCATION

MEng, Robotics | University of Maryland

📅 08/2022 – Present   📍 College Park, USA

- **CGPA** : Yet to be declared/4.0

Btech, ECE | Vellore Institute of Technology (VIT)

📅 07/2014 – 04/2018   📍 Vellore, India

- **CGPA** : 8.59/10.0

TECH STACK

Programming

Python | C++ | C | MATLAB | JS | SQL

AI/ML/Data Science

Computer Vision | Reinforcement Learning | Predictive Modelling | Time Series Analysis | Generative Models | PGM | Tableau | NLP

Web Development

HTML | CSS | Flask | JQuery | Nginx

UI/UX/AR/VR/MR

Unity | Three.JS | Aframe | AR.JS | Vuforia

Embedded/IOT/Robotics

ROS | MQTT | HTTP | Socket | Softrobotics

Simulation/Visualization

Gazebo | Rviz | PyQT | Tkinter | Kivy

PUBLICATIONS

📖 **Application of Mobile Collaborative Robot using Deep Learning in Precision Weed Control of Large Farms (Under Review)**
Big Data Analytics in Agriculture: Algorithms and Applications, Academic Press, Elsevier 21

📖 **A Univariate Data Analysis Approach for Rainfall Forecasting**
ICCIS 2020/Springer Book Series-"Lecture Notes in Networks and Systems"

📖 **A comparative study of various Classification Techniques to determine water quality**
ICICCT 2018

📖 **Prediction of Rainfall Using Data Mining Techniques**
ICICCT 2018

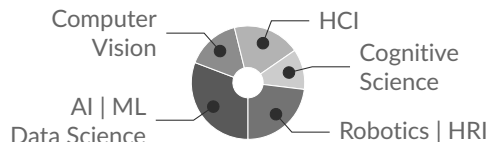📖 **Wall Climbing Robot using Soft Robotics**
IEEE-ICPCSI(2017)

Click on the icons for more details

OBJECTIVE

To perform industry-grade research utilizing my industry experience and adept knowledge in Robotics, Artificial Intelligence and Machine Vision.

Research Areas:

Computer Vision | HCI | Cognitive Science | AI | ML Data Science | Robotics | HRI

PROFESSIONAL EXPERIENCE

Project Engineer | Wipro Digital (CTO Office)

📅 07/2018 – 05/2021   📍 Banglore, India

- Served as the **AI Team Lead** of the innovation team handling cutting edge technologies like AI, IoT, AR, VR, Robotics, and Automation.
- Made significant contribution towards 5+ immersive solutions showcased at Wipro's innovation center.

Passive Mentor | Practicum Digital

📅 05/2020 – Present   📍 Banglore, India

- Conducts free online mentor-ship sessions for students and professionals from the data analytic background worldwide.

Co-Founder cum Technical Head | IEEE IAS

📅 08/2016 – 08/2017   📍 Vellore, India

- Led a team of 20+ techies(students) from various branches and working domains, helping and guiding them in the completion of industrial-grade projects with the aim to act as a professional link between the industries and the engineers.

IOT Specialist | iB Hubs

📅 05/2017 – 07/2017   📍 Banglore, India

- Contributed to the development of 2 market standard product prototypes

Core-Committee member | roboVITics - The Official Robotics club of VIT

📅 12/2014 – 03/2017   📍 Vellore, India

- Worked on more than 10 projects in the banner of the club.
- Coordinated as well as conducted robotics events and technical workshops like the 'Robowars' and 'Line Follower Challenge' for the welfare of the students.

RESEARCH EXPERIENCE

Research Intern | Robotics Innovations Lab, Indian Institute of Science

📅 05/2021 – Present   📍 Banglore, India

- Worked on **"Human Collaborative Autonomous Agricultural Robots"** under the guidance of **Dr. Abhra Roy Chowdhury**.
- Submitted a review paper on **"Application of Mobile Collaborative Robots using Deep Learning in Precision Weed Control of Large Farms"**
- Completed IEEE RAS Winter School on **"SLAM in Deformable Environments"** hosted by UTS
- Conceptualized a poster on **"Event based Dynamic Obstacle Avoidance in Outdoor Environments"**

Undergraduate Student Researcher | VIT University

📅 11/2017 – 04/2018   📍 Vellore, India

- Worked on ML based rainfall forecasting models and water quality evaluation systems under the guidance of **Dr. Renuga Devi S**.
- Presented a poster on **"Prediction of Rainfall using Data Mining Techniques"**

PATENTS

AGGRIP - A hybrid gripper for precision weeding (In Progress)
An innovative gripper for manipulators that can perform precision weeding(plucking and spraying) catering to the detected weed type. The unique design ensures minimal contacts with non-weeds using an adaptive vision-based control mechanism.

ACHIEVEMENTS

RAMI Cascade Campaign - IEEE/RSJ IROS 2021
Secured 3rd place for providing an aerial robotic solution for asset Inspection and Management (I&M).

Late Breaking Results - IEEE/RSJ IROS 2021
Poster accepted amongst the top 25 posters for a presentation.

Winter School Projects - IEEE RAS 2021
Finished as the Top 2 teams to complete 4/4 tasks with a presentation.

Top 2 Solutions - Life Technolgies
Idea shortlisted as one of the top 2 solutions for the problem statement provided by the company Life Technologies, for their digital old age homes.

National Retail Federation 2020
Led a team into developing and designing a solution that was shortlisted for a showcase at NRF 2020, a retail-based exhibition held at New York inaugurated by Satya Nadella, CEO of Microsoft.

PROJECTS

Autonomous Weeding Robot | ▶ | *Ongoing research at IISC*
📅 05/2021 - 09/2021
- A robotic manipulator based precision weeding robot for optimizing the usage of pesticides in indoor farms.
- The vision module consists of a YOLOR object detection model trained on augmented synthetic data for weed localization.
- An innovative Inverse Kinematics solver based on feed-forward neural network is used for precise manipulation.

Virtual Try-On | ⌥ | *Integrated with the MyStyle solution @ Wipro* | *Ownership transferred to Wipro*
📅 01/2021 - 02/2021
- An advanced AI solution to bring down trial room drops and to provide the customer with a style quotient evaluator .
- The solution consist of an enhanced Generative model capable of creating customizable unique textures which in turn can be rendered onto 3D Augmented Reality(AR) apparel models.
- An Aesthetic Quality Assessment Model(AQAM) evaluates the generated apparels to provide professional recommendations.
- An additional Explainable AI plugin justifies the outputs of AQAM.

AI Cricket Coach | ⌥ | *Ownership transferred to Wipro*
📅 07/2020 - Present
- An AI-backed solution that can classify bowl types based on video feeds and provide batsmen with end-to-end coaching assistance in an enhanced WebVR environment.
- The bowl classification is performed using 3D Convolution Neural Network trained on synthetic data.
- A well-curated Body Pose Estimation plugin provides precise batting pose correction feedbacks.

RL Driven Cricket Game Simulation | ⌥
📅 03/2020 - 05/2020
- A 2D Cricket game simulation engine where an RL based bowler(agent) learns to bowl as per different batting styles and fielder distributions on the field, ensuring that it gives away as minimal run as possible to the batsman and at the same time takes the maximum number of wickets down.
- The RL agent was trained using Deep Q-Learning in a custom simulator designed using Kivy.

my Style | ⌥ | ▶ | *Wipro's Top 2 solution at NRF 2020 & 2022* | *Ownership transferred to Wipro*
📅 06/2019 - 10/2019
- An end-to-end AI-powered shopping app.
- A human body measurement extraction module based on 2D photogrammetry & Body Pose Estimation enables real-time 3D human body reconstruction(Customer Digital Twin). A Content based recommendation engine is used for apparel recommendation.
- A GAN based product customization for dynamic apparel styling. A fit analyser evaluates the fit of the chosen apparel for the customer in terms of a 'Fit %' metric.

Hardware Assembly Assistant | ⌥
📅 09/2018 - 10/2018
- A Mixed Reality-based HMI solution for assisting the front row workers in factories.
- The tool detection & hand tracking module gives assistance in assembling hardware using 2D-CNN and Leap motion controller.

Click on the icons for more details