Uday Girish Maradana

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Education

- **Worcester Polytechnic Institute** — *Worcester, MA (USA)*
  MS in Robotics Engineering — *Aug 2023 – May 2025 (Exp)*
- **Central University of Hyderabad - Online Degree** — *India*
  Diploma in AI and ML, Percentage: 73% — *Feb.2021 – Mar.2022*
- **IGNOU - Distance Education/Online Degree** — *India*
  Master of Arts in Philosophy, Percentage: 78% — *Oct.2020 – Mar.2023*
- **National Institute of Technology, Calicut** — *Kerala, India*
  B.Tech Mechanical Engineering, GPA: 6.52/10.0 — *Jun.2015 – May.2019*

Work Experience

- **Machine Learning Engineer - Tiger Analytics** *(Jan 2022 - Present), India*
  - **GCP ML SPOC**: Helped organization to gain Google Cloud ML Specialization certified by actively going through all GCP projects and organizing evidence and giving a final 4 hour technical presentation.
  - **MLOps Pipeline - AWS Sagemaker**: Led a team of 3 ML Engineers to design an End-to-End retrainable MLOps pipeline with Sagemaker and AWS Services.
  - **MLOps Pipeline Dev -Price Elasticity Model**: Led a team of 4 ML Engineers in orchestrating and automating the training and inference pipeline deployment following MLOps principles on GCP. The current channel allows a price elasticity model to run on a Batch inference mode.
  - **Anomaly Detection Pipeline - Cybersecurity**: Worked as a part of the MLOps team to develop a Real-time Scalable and Automated Pipeline for Anomaly Detection in Authentication systems.
  - **Cloud IOT + ML Exploration - Internal POC**: Led the development of a Hybrid IOT architecture for easier integration with sensors and Real life Edge Deployment of ML Models on Microcontrollers using Open Source SDK's and Tiny ML.
- **Freelance ML Engineer/Data Scientist** *(Aug 2021 - Jan 2022), India*
  - **DeepJudge - Aug 2021-Jan 2022**: Worked on developing multiple components for the Information extraction platform for the Semantic search component of a Legal AI product.
  - **Aays Analytics - Aug 2021- Jan 2022**: Analysed the data from a Retail Fashion Business client and built a pipeline for Automating Scheduling and managing inventory using ML Modelling.
  - **Applied Computing - Sep 2021- Nov 2021**: Developed an ML-based API that can help in Virtual KYC automation with the help of Cloud Text extraction APIs, OpenCV, and NLP libraries to identify keywords.
- **Machine Learning Engineer II - New Space Research Technologies** *(Feb 2021 - Jul 2021), India*
  - **Targeting and Navigation Platform**: Developed a Deep learning based Targeting and Navigation platform using Deep learning based feature matching algorithms such as Superpoint, LoFTR, SuperGlue.
  - **Platform Shift- RPI to Jetson NX**: Led the exploration of shifting the current inference platform which is Raspberry Pi to CUDA based platforms to speed up the platform inference
- **Machine Learning Engineer - Quantiphi Analytics Solutions** *(May 2019 - Feb 2021), India*
  - **Solutions Research POC Team**: Worked in a team to develop firms' capability in Hybrid deployment scenarios, especially edge/cloud inference using Nvidia SDK such as Deep Stream, TLT, Clara, TFlite, and OpenVino.POC Projects include working on Television videos using google cloud AI-based APIs and analyzing the impact of characters/ sentiment in the videos with the viewership, AI-based Gym Assistant, Web Page, and Doc Translations using Google APIs and Custom approach.
  - **NLP- Transformer related script development**: This project involves developing a scalable script to deploy OpenGPT-2/Roberta/Longformer in a Kubeflow-based pipeline and benchmark the model performance.
  - **Computer Vision for Person Re-Identification**: CV pipeline for Re-identification and security. This project involves working on deep learning concepts such as Object Detection, Object Tracking, Person Reidentification, and Image Search using FAISS and Elastic Search.
  - **Computer Vision for Safety**: CV Pipeline for Safety in Parks, Resorts, etc. This project involves working on DL concepts such as Object Detection, Tracking, and Pose Estimation and deploying them using the Triton Platform.
- **Machine Learning Intern - Storilabs System Technologies** *(Jun 2018-Oct 2018),India*
  - **Computer Vision Pipeline for real-time Object Search**: CV Pipeline for Real-time object search is for identifying and live tracking of objects across multiple places and also tracking the history.

Publications

- Uday Girish, M et.al. "RIGGU: A Semi-humanoid Robot Platform for Speech and Image Recognition" in Intelligent Systems, Technologies and Applications, 2020 Paper Video.

Projects

- **Computer Vision for Movement measurement in Ultrasound Videos**: Research on Traditional and Deep Learning based Optical flow methods to track key particles movement in Ultrasound Medical videos.
- **Knee Arthroscopy Surgery Tool powered by CV**: Using Computer vision and Traditional Image processing to get a real-world transformation of the measurement made in an Image. Using Detectron2 for Segmentation and Traditional CV + Shortest distance-based approaches for Contour Detection and matching.
- **Autonomous Bot-v1 using DL and ROS(Ongoing)**: Development of an Autonomous bot using ROS, Object Detection, Lane Detection, and path planning using Jetson Nano, RPI4 with a night vision capability.
- **Auto Ticket Generation using Real time Transcription**: Developing a Workflow that can integrate with the current Call Center AI and enable Auto ticket generation with real-time speech-to-text transcription, NLP, and entity matching.
- **Anonymization tool for Surgical Videos**: Developed a Web UI using streamlit powered by ML backend, which supports multiple model integrations to anonymize different objects in a video. This tool is deployed on a cloud with Authentication and Multi-Cloud Storage integration support.
- **Evaluation of RL algorithms for long duration Trading**: Worked with a researcher to understand the efficiency of Reinforcement Learning algo such as DDPG,DQN,PPO, A2C for trading on Yahoo finance data.
- **Label Studio ML backend Integration - Auto Labelling**: Integrated Label Studio with ML-powered backend for Auto labeling. This solution is then deployed on Cloud for a client to enable faster labeling.
- **Multi Class Image Classification with Deployment**: Tuned different SOTA models, developed a few custom CNN architectures for Multi-class Image classification on the Cdiscount dataset(5000 categories), and deployed it on the cloud with Streamlit UI. This work is a part of the thesis coursework of PGD-AI/ML.
- **Knee Rehabilitation System**: Fabrication of a device with a 2 DOF mechanism which can be used for performing Flexo-extension exercises which can be used for Knee rehabilitation purposes.
- **RIGGU V2-The Semi Humanoid**: A complete framework for developing an Interactive Semi-Humanoid Robot using technologies like AI, NLP, ROS, and SLAM.
- **Quadcopter,Hexacopter**: Autonomous Quadcopter based on PixHawk Flight controller integrated with a Raspberry Pi. Hexacopter based on ARM and equipped with manual control and PID tuning was done for stability. This project involves the testing and performance analysis of hexacopter on PID and backstep algorithms.
- **Robocon Bot-ABU Robocon 2017**: A manual robot that can throw disks at specified positions was made by our Robotics Interest Group for National level Robotics Competition called Robocon-2017. I was involved in the development of Pneumatic thrust mechanics and control.

Programming Skills

- **Languages**: Python, C, C++, SQL, HTML, R
- **Technologies**: Cloud Computing(GCP, AWS,Azure), CV, NLP, RL, Robotics, Edge Computing, Speech Tech, Network Security, Quantum Computing, Databases, Microservices
- **Frameworks**: Tensorflow, OpenCV, Scikit-Learn, Pytorch, CUDA, cuDNN, ROS, Deepstream
- **Softwares**: Matlab, COMSOL,SolidWorks, Ansys,FluidSim, CREO, MasterCam, Proteus, Unity, Blender
- **OpenSource**: Octave, Arduino, Edge Devices, GitHub, Jenkins, ARM, Gazebo, OpenAI Gym

Certifications/Courses

- **Coursera**: Machine Learning by Andrew Ng, Deep Learning Specialisation, Tensorflow Data, and Deployment Specialization, Preparing for GCP ML Specialization, Reinforcement learning-Univ.of Alberta(Ongoing), Robotics Specialization-Upenn (Ongoing)
- **CloudTech**: GCP Professional ML Engineer, AWS ML Speciality, Tensorflow Developer Certificate, GCP Cloud Associate Engineer, AWS Associate Solutions Architect
- **Electives/Courses**: Control Systems, Introduction to Robotics, Image Processing, Dynamics, Neural networks and Genetic algorithms, Machine Learning, Deep Learning

- **Others**: Nvidia Data science with RAPIDS, Introduction to Quantum Computing Diploma(Qubit by Qubit), Global Quantum computing workshop - QBronze, QSilver (Qworld), Quantum Machine Learning Summer school (IBM), Introduction to Computational Neuroscience(Neuromatch), Advanced DSA & System Design - Tutort Academy, ThinkAutonomous.ai - OpticalFlow, Stereo Vision, Neural Optimization, Udemy - Reinforcement Learning
- **Udacity**: Introduction to AWS ML, Introduction to Nutanix Cloud, Self Driving Engineer Nanodegree(Ongoing),Robotics Software Engineer Nanodegree(Ongoing).
- **Distance Learning**: ASU CareerCatalyst (Ongoing)- Operating Systems, Computer Organization, Principles of Programming Languages

Research Interests

- Artificial Intelligence,Robotics, Reinforcement Learning, Advanced Drone Systems, MultiRobot System, Multimodal Deep learning , Human-Computer Interaction, Quantum Physics, Quantum Computing, Defence Systems, Neuroscience, Consciousness, Space and Cosmology

Activities

- **Robotics Interest Group Member (2016-2019)**:
  • Participated in National Level Robotics Competition with team of 20 Members.
  Role Played: Mechanical design and fabrication of manually controlled Robot.
  • Volunteered workshops on Basic Introduction to Robotics to college juniors.
  Role Played: Explained the software and gave introduction to Pneumatics,various field of robotics and explained how to code a Line following robot and Obstacle Detection Robot.
  • Conducted Workshops for more than 300 students on topics such as Machine Learning, Deep learning and Robotics.
- **Yatri at Jagriti Yatra 2019**:
  • An exciting journey around 12 different places in India, connecting with 450 people from different parts of world. Meeting people who are doing exceptionally well in the fields of social welfare, Sustainable Product development, Technology, Rural development etc.

Community Outreach

- Participant : 3D Computer Vision Workshop concentrated on 3D Geometry and Deep Learning methods conducted at IIIT Hyderabad.
- Speaker : Handled a session on Neuroscience and Artificial Intelligence in a GDG Meetup
- Speaker : Conducted Introductory Workshop on Robotics and AI to Rural IT people as a part of India Literacy Program
- Participant : NiTCkathon.Ai which is an AI based hackathon conducted by JMR Infotech.
- Participant : India design Contest conducted by DST, Texas Instruments,Startup India.
- Attendee : Short-term programme on Research Methodology in Science, Energy and Management.
- Attendee : Full day session on Startup and IPR Awareness Program.
- Attendee : Seminar on Innovations in Space Technology

References

- **Dr. AP Sudheer** — *NIT Calicut*
  Associate Professor — *Dept. of Mechanical Eng.*
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- **Dr. Kartik MV** — *Pictus AI*
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