ODIL JANANDITH

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SUMMARY

I am Engineering student with a passion for robotics, computer vision and startups. I have a strong foundation in SLAM, computer vision for robotic perception and embedded systems. For my final year thesis, I am building an autonomous mobility system for quadruped and wheeled platforms. When I'm not building or coding robots , I work on developing STEM curriculum and Ed-tech platforms for the next generation of students.

EXPERIENCE

Present SEP 2023	Chief Technology Officer *RoboticGen Academy | Colombo, Sri Lanka* RoboticGen Academy is an Edu-Tech Startup where we are trying to revolutionize how the next generation is going to learn Robotics and AI. As the CTO and a founding member of the Startup I lead my team in the project "Future of Learning" where we develop a highly scalable journey based personalized learning experience. We are developing our own edutech hardware and software product lineup called "Oboverse" to strengthen our ecosystem. I currently serve in a strategic capacity, dedicating off-hours to guide product vision while pursuing my academics and later a full-time professional opportunity
Present JUN 2025	Head of Research and Development *SLRC Branch, Electronics Club | University of Moratuwa, Sri Lanka* Led the designing of the challenge tasks for Sri Lanka Robotics Challenge 2025. Coordinating research initiatives done by SLRC branch.
Jun 2025 DEC 2024	Robotics Engineer Intern *RoboticGen | Colombo, Sri Lanka* Involved in developing a custom robotics stack based on the Unitree Go2 Air platform. Developed camera and 3D lidar perception systems to run on NVIDIA Jetson Orin Nano. Contributed to develop a telematics solution for an employee transportation system of a textile manufacturing company. Invloved in work related to 4G connectiviyt, GNSS, Human friendly touch interface for embedded systems
Sep 2023 APR 2023	Head of Content *RoboticGen | Colombo, Sri Lanka* At the very beginning of the startup I led the Technical Content Team to develop the curriculum and the learning experience with the consultancy of the experts in the field.
Mar 2024 JAN 2023	Technical Team Lead *Team Taprobane 4.0 | SEDS Sri Lanka* Leading the Tabrobane 4.0 team in to remote edition of European Rover Challenge 2024. I also worked as the Control and Data handling team lead in Tabprobane 3.0 for International Rover Design Challenge 2023
Jan 2023 AUG 2022	International Relations Panelist *AIESEC Colombo South* Got the opportunity to interact with different people around the world and pitch the projects offered by AIESEC Colombo South to global volunteers.
Mar 2022 AUG DEC 2020	Intern *Circuit Breakers Robotics* creating content to teach robotics to kids and working as a team to empower robotics education in Sri Lanka. Participating in robotics competitions.

EDUCATION

2022 - Present	**University of Moratuwa**, Sri Lanka BsC Eng (Hons) in ELECTRONIC AND TELECOMMUNICATION (UG) **Clubs and Societies** - Gavel Club, AIESEC CS, IEEE IES Student Chapter of UoM. CGPA: 3.52/4.0
2007 - 2020	**Ananda College**, Colombo 10 Physical Science Stream (Advanced Level) **Clubs and Societies** - Senior Quiz Team, Sinhala Literary Union Executive Board Z SCORE: 2.525

PUBLICATIONS

Soil Penetration Darts (SPDs) for Deep Soil Sampling *Nexus Aurora*

International Astronautical Congress 2022 / International Astronautical Federation (IAF) · Sep 19, 2022. The paper, Soil Penetration Darts (SPDs) for Deep Soil Sampling, focuses on a revolutionary method for sampling the subsurface of planets. We validated the feasibility of the concept using simulation tools like DEM (Discrete Elemental Method) and Fluid Dynamics Simulations

(Access the paper)   (See the Project Page)

PROJECTS

Quadruped Mobility System for Dynamic Sensing | Final Year Project *University*

Engineered and deployed a CUDA-accelerated mobility stack on a Unitree Go2 robot equipped with a Jetson Orin Nano and a 3D Lidar. The onboard pipeline integrates Direct LiDAR Inertial Odometry (DLIO), Open3D SLAM for 3D mapping, a visibility graph based path planner, a behavior tree based mission planner, terrain traverisbility module (staircase/ramp detection using lidar pointcloud + collision avoidance). Final Year Project is a partership with RoboticGen.

(View the full project organization)   (view the Staircase detector)

Design and development of Compute and Sensing unit for Unitree Go2 Robot *RoboticGen* *(Internship)*

Designed a backpack for Unitree Go2 Air robot model that contains a Jetson Orin Nano, Mid 360 3D Lidar, 1 Gbps network switch and a power subsystem. Developed a custom ROS2 wrapper to interface the Jetson compute module with the robot through its WebRTC link. I experimented with ROS2 middleware like CycloneDDS, FastDDS and Zenoh and applied several optimizations to reduce network bandwidth issues. Used tools like docker, gitman, foxglove, rerun, ollama, tensorRT, postman for several tasks within this project.

Obo Mouse v1.0 , v2.0 *RoboticGen*

Obo Mouse is a home grown micromouse robot that showed prominence in the South Asian micromouse circuit during 2023-2024 period. Obo Mouse is based on a STM32 microcontroller and is programmed with embedded C on Cube IDE. We fielded our robot in the Technoxian World Robotics Challenge and we could complete the final round finishing at fourth. In 2022 we won the Second Place at SLIIT Robofest Competition and also won the championship at IIT MicroMaze Competition in 2024

(See more details here)

iCliQ - novel wearable for presenters & public speakers *University*

For the second semester Engineering Design Project, our team "Company of Noobs" made a wearable remote which acts as a convenient device for public speakers, presenters. The device can send signals in specified time flags. It can be used to change slides during a presentation and it can also be used as a pointer. I did the 4 layer PCB design according to ESP32 hardware design guidelines solely on my own. Experimented with a PowerGroundGroundSignal layer stack for the PCB.

(See more details here)

QSentinal IOT Suite   *Hackathon*

Qsentinal is a suite of IOT protocols to cater the the growing requirements in industries and services. We have developed two protocols lotEN and lotUDP. These protocols provide enhanced security, increased payload sizes and easier integration. We are also developing sample applications for swarm robotics systems, quality assurance tags for cold supply chains, sensor networks (check Eco Nova Project) based on the protocol suite.

(See more details here)

Vision Based Bin Picking Robot System   *University*

A computer vision system to locate boxes in an industrial warehouse. We have worked with semantic segmentation models such as DeepLab, UNet, SegNet, Efficient Net and Corner Net to evaulate there suitability for the application. Finally we built our vision system using FastSAM model. We achieved a performance of around 7 FPS on a real time feed only using the CPU for inferencing.Also we developed an attachable gripper that can be attached into any commercially-off-the-shelf manipulator.

(See more on the project organization)

Programming the Kobuki Robot Base   *Competition*

Developed a computer vision solution based on OpenCV to compete in the IESL Robogames 2023. We deployed the system in Kobuki robot platform. We could secure the championship in the RoboGames competition .

(See more details here)

Smart Mask Brace - Wearable   *Personal*

I developed a "Smart Mask Brace" which can simply convert your cheap surgical mask into a modern smart mask for a comparatively smaller price. It can monitor health data such as blood oxygen level and temperature of the user while improving the fit of the surgical mask. .

(See more details here)

Taprobane 3.0 - European Rover Challenge | 2022 - 2023   *SEDS Sri Lanka*

In 2022, I got promoted as a team lead in Controls and Data Handling Team. My task was to design the overall control system of the rover to complete the tasks given in the competition. Also I oversaw the cooperation between the C&DH team and Electrical team as a systems engineer to maintain the smooth communication between the sub teams. Our team got into the finals (top 20) of ERC surpassing teams from top universities in the world but could not present the physical rover at the Mars arena in Poland because of the economic crisis situation.

Taprobane 3.0 - International Rover Design Challenge 2021   *SEDS Sri Lanka*

I got the opportunity to work as a team member of the Tabrobane 3.0 - Sri Lankan Mars rover design team which took part in the International Rover Design challenge-2021 organized by the Mars Society South Asia. Taprobane 3.0 rover was designed to explore the unstructured Martian Lava tubes to explore the possibilities of colonizing Mars in the future. I contributed to the rover by proposing a novel mapping and localization technique along with a Mechanically Pumped Fluid Loop (MPFL) architecture to circulate the RTG heat. Taprobane 3.0 got the 8th place in the International Rover Design Challenge..

Edge Implementations for Mobile CLIP model   *University*

Deployed mobile CLIP model in Jetson Orin Nano, Apple Iphone 15 Pro and AMD Ryzen 7 CPU utilizing tensorRT, Core ML, ONNX frameworks respectively. Goal was to demonstrate the capability of mobile-Clip to do inferecing on differet edge devices which could be useful for a usecase like semantic SLAM. This was part of the coursework for EN4554 Deep Learning for Vision.

(View the Presentation)

Real-Time Monocular Depth Estimation Pipeline for Robotic Applications *University*
Developed low latency monocular depth estimation (MDE) pipeline for robotic applications as a course work for EN3160 Image Processing and Machine Vision. We analyzed the capabilities of the models offered by Depth Anything model to implement and optimize into a real time applications.
(View the Presentation)

Eco Nova Agrivoltaic Solar Project *Eco Nova*
An award-winning concept project aimed at improving the sustainability of land by combining solar power generation with agriculture. Our hardware stack based on the Qsentinal IOT suite and an analytics tools call "agro plan model" allow one to increase the ROI by 4 times more than conventional solar farms.
(View the pitch deck)

Odil's World Portfolio Website *Personal*
Interactive 3D experience where the viewers get to tele-operate a robot dog in their browser and interact with objects to explore my portfolio. This is a fun ongoing weekend project inspired by Bruno Simon's three.js based portfolio site.
(View the website - odil.world)

PROFESSIONAL QUALIFICATIONS

Remote Training Program for Embedded Technology Engineer in Sri Lanka *2021*
Implemented by The Association for Overseas Technical Cooperation and Sustainable Partnerships, Japan and Ministry of Economy, Trade and Industry, Japan.
Performance level - A

ICTA Step Startup Incubator *2021-2022*
Team Ceylon solvers led by me got the opportunity to take part in ICTA Step Startup Incubator to scale up our product : Smart Mask Brace. There I learnt a lot about product Design, Marketing, Social Media Presence, Pricing, legal matters, Business modelling.

SKILLS

Languages : C++, Embedded C, Python

PCB Designing : Altium

Parametric Modelling : SolidWorks, Onshape

Developer tools : Version Control (Git and Github), SLAM toolbox, Nav2, Docker, Linux

Frameworks : PyTorch, ROS2, CUDA, React

Coursework : Deep learning for vision, Control systems, Autonomous systems, Robotics, Electronic Product Design

Soft skills : Public speaking, Problem solving, Technical writing, Research skills, Quizzing

HONOURS, AWARDS AND ACHIEVEMENTS

Honorary Mention - IEEE COMSOC Student Competition *Dec 2024*
Qsentinal IOT Suite won a honorary mention at the IEEE Communication Society Global Student Competition - View 2024 Winners

Champions - SPARK Challenge *Nov 2024*
Team Eco Nova led by me won the Spark challenge 2024 for our agri-voltaic solar project. We received a grant to work on our pilot project.

Champions - IIT MicroMaze   *Sep 2024*
Team Roboticgen won the first place in the micromouse competition organized by the IEEE RAS of IIT,
Sri lanka. We placed Obo Mouse v2.0 in the competition

Winners - Comfix'4 by IEEE COMSOC of UoM   *Sep 2024*
We managed to secure the first place in Comfix'24 organized by the IEEE COMSOC student chapter of
UoM. We pitched our research with Qsentinal IOT Suite for this communication based competition.

Champions - IESL RoboGame   *Nov 2023*
Team Roboticgen won the first place in IESL Robogames. We developed a computer vision system for
the kobuki robotics platform powered by a Jetson nano.

2nd Runners Up - Varsity Battles   *Aug 2023*
Won the second runners up in inter-faculty quiz organized by the Securities and Exchange Commission
of Sri Lanka (SEC) and the Colombo Stock Exchange (CSE),.

1st Runners Up - SLIIT Robofest   *Sep 2023*
We won the second place in Robofest robotics competition organized by SLIIT.

Finalists - Technoxian World Robotics Championship Micromouse competition *Jul 2023*
Obo micromouse we developed at Roboticgen could successfully complete the final round of the mi-
cromouse competition at the Technoxian World Robotics Competition, Delhi, India.

1st Runners Up - Future Innovator challenge '22   *Aug 2022*
Issued by IEEE Industrial Electronic Society. Smart Mask Brace was yet again recognized in a presti-
gious innovation competition.

Champion - HackX jr 2021   *Sep 2021*
development competition surpassing more than 100 ideas and products. We introduced a "Smart Mask
Brace" which can be used to upgrade a cheap surgical mask into a modern smart mask for a compar-
atively smaller price.

Finalists - Brainstorm'22   *Feb 2021*
Issued by IEEE EMBS, University of Moratuwa, We got selected as Finalists (last six) in the Bio Medical
Engineering Competition as the youngest team after competing with more than 50 undergraduate
teams.

Top 5 Products - Innovmind International hackathon   *Nov 2021*
Issued by IEEE Industry Automation Society of SLTC. Our Smart Mask Brace got selected into "Top 5
Innovative products" in the "Innovmind" international Ideathon organized by IAS, SLTC

Finalists - SLRC school edition   *Sep 2021*
Developed a robot called 'VIMO' for the SLRC 2021 final which was held online ysing virtual simulation
software, webots. Got the overall 4th place.

Winner - Illusio Competition   *Apr 2021*
Illusio organized by IEEE IAS of SLTC is a competition dedicated at showcasing new ideas and products
related to VR and AR technologies that have the potential of promoting Sri Lankan Tourism. My pro-
posal about developing a VR based Safari Experience won the first place in the Competition

Winner - Machine Learning Challenge   *Apr 2021*
Awarded by American Center & Maker space for winning the machine learning challenge.

Volunteering

Technical Committee member of SLRC branch, Electronic Club   *Aug 2023 - Present*

Member of Gavel Club of UoM   *Jan 2022 - Present*

Resource Person in Robotics Workshops of Rotaract Club UoM   *Mar 2023*

Technical Committee Member of IEEE IES Student Chapter of UoM   *Jan 2023 - Aug23*

Member of AIESEC Colombo South   *Aug 2022 - Mar 2023*

Vice Captain of Senior Quiz Team, Ananda College   *Aug 2022 - Mar 2023*

References

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