Viduranga Shenal Landers

UNDERGRADUATE

Wattala, Sri Lanka | Date of birth : 27/02/2002 | Nationality : Sri Lankan

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A highly motivated student with strong leadership qualities who is constantly seeking new challenges to push the limits of his knowledge. Contributes to the development of the space industry in Sri Lanka by initiating space projects for local space communities. Actively seeking for academic opportunities in astronautics and quantum computing.

Education

University Education, University of Colombo School of Computing, Sri Lanka (2023 - 2027)

B.Sc. program in Computer Science

Secondary Education, D. S. Senanayake College, Colombo 07, Sri Lanka (2013 - 2022)

GCE Advanced Level - 2022(2021) - Physical Science Stream

- 2 A passes in Chemistry and Gen. English, 1 B pass in Physics and 1 C pass in Combined Math
- All Island Rank: 2258 *(93rd Percentile)*

SAT Reasoning Test (Dec 2022):

- 1490: 790 Math & 700 EBRW *(97th Percentile)*

GCE Ordinary Level (2018) :

- 9 A passes

Activities

- President - Astronomy Club   • Secretary - Social Services Association   • Exec. Member - Aeronautical Club

Introduction to Quantum Computing, The Coding School | Qubit x Qubit | IBM (2020 – 2021)

- One year (two semester) program on quantum mechanics and programming quantum computers
- Grade: 100/100

HONORS AND AWARDS

5th Place and Finalist Team, European Rover Challenge (team)   *2023*
Taprobane v4.0 achieved 5th place in the Qualification A round of ERC 2023 remote edition.

17th Place and Finalist Team, European Rover Challenge (team)   *2022*
Taprobane v3.0 finished 17th in the preliminary round of 2022 and qualified for the final round in Poland.

Advanced Achievements x5, IBM Quantum Challenge   *2023, 2022,*
Completed all tasks in Spring 2021, Fall 2021, Spring 2022, Fall 2022 and Spring 2023   *2021*

Top Scorer, IBM Quantum Challenge Spring 2021   *2021*
Designed the least expensive quantum circuit for the final task to become a top scorer.

Distinction Award, Singapore Space Challenge 2021 (team)   *2021*
Created a lunar rover design (SPIDER) that became runners-up and was awarded the distinction award.

Global Nominee, NASA Space Apps Challenge 2020 (team)   *2020*
Created an AI-based chat bot and represented Sri Lanka at the international hackathon.

Silver Award, Hong Kong International Mathematics Olympiad Heats   *2020*
Earned the Silver award and ranked 97th in the senior secondary category of HKIMO heats

Gold Medal, Sri Lankan Astronomy and Astrophysics Olympiad   *2019*
Qualified for the International Astronomy Olympiad 2020 national team (cancelled due to COVID-19).

High Distinction and Honorable Mention, Sri Lankan Mathematics Competition   *2021, 2019,*
Qualified for the International Math Olympiad 2021 National B Team selection pool.   *2018*

RESEARCH EXPERIENCE

Co-Lead – HOPE Team   (Jan 2023 – Present)

Structures & Thermal Subsystem Lead – RAISE Team   (Jan 2022 – Dec 2022)

ACHIEVED | Space Exploration Project Group | Space Generation Advisory Council 👓 (Jan 2022 – Present)

- RAISE and HOPE are year-long research projects of the Space Generation Advisory Council's ACHIEVED project
- Co-leading a research team in the design of a CubeSat and impactor mission to a Uranian moon *(HOPE-2023)*
- Designed the mechanical and thermal subsystems of a sample return mission concept to Mercury *(RAISE-2022)*

Project Lead

Nexus Aurora Corporation 👓   (Aug 2022 – Present)

- US based space research organization and an open-source space project incubator
- Leading a six-member international team in the research and development of a planetary penetrator device (Soil Penetration Darts) to reduce the cost of obtaining deep soil samples from the Moon
- Presented a paper on the SPD research at the International Astronautical Congress in 2022

Remote Student Team Lead

Global Lunar Expedition for Everyone 👓   (May 2022 – Present)

- A NASA Artemis Challenge that aims to send 500 student developed ChipSats to the Moon
- Leading the mission operations planning and programming phases of two LunaSats with a five-member team.
- Organizing Science outreach activities in the local region for the general public and students

Technical Team Lead   (Apr 2023 – Present)

Systems Engineering Group Lead   (Jan 2022 – Mar 2023)

Robotics and Rover Division of SEDS Sri Lanka 👓   (Jan 2022 – Present)

- The Robotics and Rover Division is currently developing Taprobane, Sri Lanka's first ever analog Mars rover.
- Leading a 50+ member university student team in the development and renovation of Taprobane rover
- Managing two teams for the European Rover Challenge 2023 on-site edition and remote edition
- Introduced and implemented systems engineering principles to the ongoing project from ground-up.
  - ➤ Taprobane v4.0: 5th Place at the Qualification A of remote edition of European Rover Challenge 2023
  - ➤ Taprobane v3.0: 17th Place at the on-site edition of European Rover Challenge 2022

Team Leader

Lunarbot 👓   (Feb 2020 – Present)

- Founder of Lunarbot, a local student team that aims to develop innovative instruments for planetary rovers
- Among the projects are:
  - ➤ SAWS: *A grouser adjustable wheel system for space exploration rovers*
  - ➤ SAWSV2: *10 inch version of SAWS integrated to the MDRS SSAM rover of Nexus Aurora*
  - ➤ SWORD: *An extendable drilling mechanism for deep drilling on the lunar surface*
  - ➤ SPIDER: *Runners-up Lunar rover concept at the Singapore Space Challenge 2021*
- In 2021, Lunarbot collaborated with Nexus Aurora to produce eight prototypes of the SAWS system, testing six on the SSAM rover at the Mars Desert Research Station and two on an Axel rover configuration in Sri Lanka.
- A collaboration with Orbit Logic is underway for a technology demonstration of the SSAM rover, with a possible funding opportunity from NASA's Jet Propulsion Laboratory.
- Presented a paper on the SAWS research at the International Astronautical Congress in 2021

WORK EXPERIENCE

Writer / Programmer (Part Time), Fiverr (Mar 2022 – Present)
- Working on assignment writing and programming projects for a local network of writers
- Projects: C/Python programming, data science, machine learning, quantum computing, network security

Technical Assistant (Part Time), Deluxe Traders Pvt Ltd (Oct 2019 – Aug 2020)
- Aided repair and configuration of 100+ work laptops for offices in Colombo

PUBLICATIONS

Conference Papers

Soil Penetration Darts (SPDs) for Deep Soil Sampling (IAC-22,A3,IPB,30,x72590)
IAF Space Exploration Symposium, 73rd International Astronautical Congress in Paris, France (Sep 18-22, 2022)
Landers V.*, Pathirana O., et al

Mercury Sample Return Mission Design Utilizing Innovative Systems and Technologies (IAC-22,A3,5,1,x69552)
IAF Space Exploration Symposium, 73rd International Astronautical Congress in Paris, France (Sep 18-22, 2022)
Rao S.*, Landers V., et al

A Self Adapting Wheel System (IAC-21,E2,3-GTS.4,2,x65366)
49th Student Conference, 72nd International Astronautical Congress in Dubai, UAE (Oct 25-29, 2021)
Landers V.*, Pathirana O., Pieris J., Ranasinghe S.

Accepted Conference Papers in Making

High-technology Operation for Planetary Exploration - uRanian mOons impActoR (HOPE-ROAR) mission: an innovative in-depth study of the Uranian satellites (IAC-23,B4,8,12,x76984)
30th IAA Symposium on Small Satellite Missions, 74th International Astronautical Congress in Baku, Azerbaijan (Oct 02-06, 2023)
Landers V.*, Campioli S., et al

Papers in Making

A novel entanglement based QKD protocol based on modified Deutsh-Josza Algorithm
Landers V.*

PATENTS

A Fully Autonomous Extendable Drill (Applied – Sri Lankan Patent Application No: LKA21652)
Landers V., Pathirana O., Pieris J., Ranasinghe S.

A Wheel that includes Autonomous Adjustable Grousers (Applied – Sri Lankan Patent Application No: LKA21653)
Landers V., Pathirana O., Pieris J., Ranasinghe S.

PROFESSIONAL TRAINING

Certifications

Certified Network Security Specialist (CNSS), International Cyber Security Institute (May 2020 – Jul 2020)

QBronze Diploma in Quantum Computing and Programming – QTunisia, QWorld (Oct 2020 – Nov 2020)

JAVA Application Development, University of Colombo School of Computing (Jan 2019 – Mar 2019)

Summer Schools

Summer School in Planetary Sciences, University of Science and Technology of China (31 Jul – 06 Aug 2022)

Qiskit Global Summer School 2022 on Quantum Simulations, IBM (18 – 29 Jul 2022)

Qiskit Global Summer School 2021 on Quantum Machine Learning, IBM (12 – 23 Jul 2021)

Workshops

Data Science Masterclass, Data Think Professional (Jul - Sep 2022)

Sagan Summer Workshop 2022, NASA Exoplanet Science Institute | Caltech (25 – 29 Jul 2022)

CubeSat Development and Ground Station Control - SEDS Pera | IEEE MTT-S | Orion Space (May 2021 – Jun 2021)

CubeSat Workshop and Lecture Series - SEDS Pera | Orion Space | University of Peradeniya (7 – 10 Mar 2020)

PROFESSIONAL AFFILIATIONS

Space Generation Advisory Council (2021 – Present)
• ACHIEVED-HOPE research team Co-lead (Jan 2023-Present)
• Delegate of the Space Generation Congress 2022
• ACHIEVED-RAISE research team member (Jan 2022 – Dec 2022)
• Member of the Space Exploration Project Group (2021 – Present)

Students for the Exploration and Development of Space (SEDS) Sri Lanka (2020 – Present)
• Technical Team Co-lead of Taprobane rover project (Apr 2023 – Present)
• Systems Engineering Group Lead of Taprobane rover project (Jan 2021 – Mar 2023)
• Coordinator for the Juniors Chapter (Mar 2021 – Jun 2022)

Volunteering

Contributor & Event Organizer (2016 – Present)
• Annual CSR Projects for donating educational materials to rural schools

Citizen Scientist (2020 – 2021)
• Asteroid Search Campaigns by the IASC and Pan-STARRS
• Chief Organizer and Mentor of Orbit'21 Asteroid Search Campaign in 2021
• Provisional Asteroids discovered: 2021 CH23, 2020 TL54, 2020 QF3, 2020 PX12

Mentor (2019 – Present)
• Astronomy Society of D.S.Senanayake College
(NASA Educator Professional Development: 7 credits)

Event Organizer
• JUNIOR ASTRO NIGHT 2021 – Astronomy workshop by SEDS Sri Lanka (2021)
• ESPER'20 – Annual Inter School Science Quiz Competition (2020)
• NEEDS FOR NEEDY – book donation camp at Passara Madya Maha Vidyalaya (2019)

Blood Donor (2020 – Present)

Skills

Programming	C | Python | JAVA (basic) | QASM (basic) | Data Analysis | Machine Learning (basic)
Other Technical	CAD/FEM (SolidWorks, SolidEdge, Inventor) | DEM (EDEM, PFC) | MBSE (Capella)
Soft Skills	Leadership | Project Management |Teamwork | Research | Writing | Science Communication
Languages	Sinhala (Native) | English (C1 Level)

Others

Mathematical Art Publications

Collatz Feather 2.0 🔗
Exhibition of Mathematical Art, Joint Mathematics Meetings (JMM) 2023, Boston, MA, USA (Jan 4-7, 2023)
SpiraL 🔗
Exhibition of Mathematical Art, Joint Mathematics Meetings (JMM) 2023, Boston, MA, USA (Jan 4-7, 2023)

Mathematical Art Portfolio

https://vidurangalanders.github.io/fractal_art/ 🔗