Thilosha Nipunajith Gammanpila

My Portfolio | LinkedIn
Email: thiloshanipunajith@gmail.com | TP: +94711438456

Education

Sabaragamuwa University of Sri Lanka | *Bachelor of Science Honors in Surveying Sciences in GIS*
Dec. 2018 to Jun. 2023

- *Grade: Second Class Honors (Upper Division), GPA: 3.41*
- Computer Programing (C, C++, PHP, HTML, CSS, Java, JavaScript, Python), Advanced Mathematics (Descriptive Statistics & Probabilistic Functions, Inferential Statistics and Numerical Methods, Linear Algebra, Differential Calculus), Advance Physics(Mechanics, Electro Magnetic and Electro Static Fields), Optical & Microwave Remote Sensing, GIS Modelling, GIS Programming and Customization, Open-Source GIS & Web Mapping
- President, SEDS Sabaragamuwa University of Sri Lanka Chapter
- Undergraduate Thesis: Landslide Risk Assessment and Dissemination Using Multi Source Spatial Parameter Integration for High-Risk Zones of Sri Lanka

Professional Experience

SULECO (Pvt) Ltd. | Manager, Spatio SDS (Spatial Data Systems) Division January 2025 to Present

- Leading and project managing geospatial system-based solution development projects of the division
    - Spatio LGS (Local Government Systems) - a smart city asset management platform.
        - Colombo Municipal Council Pilot Project - ESRI solutions based Geographic Data based Decision Support System (GDSS)
            - I managed and executed the pilot project specifically for Colombo Municipal Council, leading the planning, advanced surveying (SLAM, GNSS, LiDAR), and system integration to deliver a unified digital solution for council assets. Developed innovative spatial modeling algorithms that unified multisource 3D data. My work included advanced data processing, geostatistical analysis, and integration into a scalable digital environment, I authored the full technical proposal and Software Requirements Specification (SRS).
                - Project Link
                    - Tree Management System
                    - GDSS homepage

        - Infobhoomi Land Information System(Open Source) –World Bank-funded InfoBhoomi Land Information System pilot for Bandarawela Municipal Council with Sabaragamuwa University
            - Worked on designing and implementing a SDI based Land Information Management System (LIMS) for municipal governance. I developed spatial models and algorithms utilizing UAV and GNSS-based surveys, parcel digitization, and high-accuracy mapping while integrating data science approaches, like spatial analytics, predictive modeling, and land-use classification—to strengthen the system's decision-support capabilities aligning with international standards such as ISO 19152 (LADM).
                - Project Link – Click Here (User Name: admin_suleco, Password: admin@123)

    - Mahaweli Consultancy Bureau GIS App for Tank Capacity and Discharge Rate Calculations
        - I developed and implemented a mathematical model for calculating tank volumes and discharge flow rates with high precision. This project involved designing and integrating advanced geospatial models to automate crucial water resource metrics directly within the system. My work also included a seven-parameter projection configuration for seamless geospatial data conversion and interoperability.
            - Link – Click Here (User Name: admin@gis.com, PW: admin@gis.com)

    - Spatio Agri – Scalable Agricultural Asset Management Platform
        - A fully capable, GIS-powered agricultural asset management application. As lead developer, I created core spatial models and automated algorithms for point(coconut)/ polygon(mango) based tree digitizing,

counting. I authored the full technical proposal and Software Requirements Specification (SRS).

- Four main variations of Spatio Agri, each tailored to specific estate crops and workflows, include:
  - Coco Panel (Yara Plantation) for Coconut
    - Link for Demo – Click Here (User Name: admin1, PW: adminpass)
  - Mango Buddy (Nelna Plantation) for mango
  - Rubber Panel (Kelani Valley) for Rubber
  - Tea Time (Demodara Tea Estate) for tea

My contributions centered on developing algorithms for rapid tree digitization (polygon and point models), automated tree counting, and geospatial visualization models supporting practical use by field teams as well as estate managers.

- Forestry Management Information System (FMIS) for Browns Plantations PLC
  - Model integration for LiDAR-based tree segmentation using ALS (Airborne Laser Scanning) data. Enabled automated inventory creation, tree species classification, canopy and biomass assessment, and dynamic plantation mapping and later integrated for Browns PLC's ERP. Validated these with LiDAR360 v9's forestry tools in partnership with GreenValley International. I authored the full technical proposal and Software Requirements Specification (SRS).

- Pavement Maintenance Management System (PMMS) at Katunayake Airport for Airport and Aviation Services (Sri Lanka) Pvt Ltd.
  - Developed and deployed Sri Lanka's first automated runway crack detection model. The system utilized high-accuracy LiDAR, GNSS, and SLAM data to train and validate a defect identification algorithm—streamlining runway inspections and maintenance workflows. I authored the full technical proposal and Software Requirements Specification (SRS).

- Urban Development Authority's Land Property Information System (LPIS)
  - Played a role in automating georeferencing algorithms for scanned plans and documents in the Urban Development Authority's LPIS—enabling seamless digital conversion of property records. This solution was a cornerstone for the Sri Lankan government's large-scale land digitization. I authored the full technical proposal and Software Requirements Specification (SRS).

- LiDAR360 v9 Beta Version's Forestry Model testing with GreenValley Internationals
  - Worked closely with GreenValley International to test and enhance LiDAR360 v9's forestry models, targeting ALS (Airborne Laser Scanning) data where tree segmentation is typically more challenging compared to TLS (Terrestrial Laser Scanning) data. By developing and applying advanced point cloud segmentation and voxel-based volumetric calculation algorithms, I helped refine the ALS tree segmentation tool for greater accuracy.

- Risk Radar – Disaster Prediction Application based on Social Parameters collaborating with Geo Info Box
  - Consulted this prediction model, which estimates disaster-prone areas down to the smallest administrative level using social survey data, historical disaster records, and multi-factor socio-economic parameters. I created a risk prediction model that integrates parametric and historical data, providing precise, evidence-based forecasts.
    - Project Link – Click Here

- Landslide Resilience Analytical and Advisory System (LA-Res) – National Building Research Organization (NBRO) and GPC GIS Group
  - I authored and delivered a full technical proposal and requirements specification. While the project was put on hold due to funding constraints, we began early development work—designing parametric models to analyze landslide causative factors (terrain, rainfall, infrastructure, soil) and integrating IoT sensor data for real-time risk intelligence. We structured the architecture for 2D and 3D GIS visualization, field data collection, and early warning dissemination via dashboards and mobile alerts.

- Sigiriya VR and Audio Guidance System (Ongoing Project)
  - Authored the technical proposal for the Sigiriya VR and Audio Guidance System, working in close

collaboration with SLT Mobitel and archaeological experts to ensure historical accuracy and innovative technology integration. My responsibilities span geo-visualizing the reconstructed 5th-century Sigiriya fortress, programming spatial models for georeferenced navigation, and building the audio-guide system with location-based triggers. I implemented spatial algorithms that synchronize visitor movement.

- Kandy Virtual City Heritage VR Platform for 68 Locations (Ongoing Project)
  - I authored the complete technical proposal for the Kandy Virtual City project with SLT Mobitel, collaboration with archaeological experts. My core contributions include data-driven spatial model building for game-engine environments for all 68 heritage and cultural sites. I developed modules for geo-visualization, interactive mapping, and real-time audio guide integration.

- Godawaya Shipwreck 3D Scientific Documentation & Conservation System
  - Led the technical development of an interactive 3D mesh-based visualization platform transforming complex underwater scan data into high-resolution, spatially accurate digital reconstructions. My expertise included advanced data processing, mesh building with custom plugins. I designed and executed the workflow for integrating multi-source point clouds, optimizing mesh geometry, and enabling real-time exploration via platforms like Cesium Stories.
    - Project Link: Click Here

SULECO (Pvt) Ltd. | Geospatial Developer July 2023 to January 2025

- Visigeo Geospatial Analytics & Visualization Platform for 2D/3D Data
  - I played a key role in development of Visigeo, integrating more than 50 large-scale asset management and environmental projects into a unified analytics archive. My core contributions focused on advanced Python-based spatial model building, I developed automated polygon-based and point-based tree counting and digitizing algorithms, as well as automated building footprint extraction. These models enabled rapid and precise analytics for forestry and urban infrastructure at locations including Colombo, Veyangoda, Deniyaya, Galoya, Ratnapura, and more. My involvement spanned software development, requirement analysis, technical research, QA as well.
    - Example project for 2D geospatial data visualization – Click Here (Browns PLC)
    - Example for 3D geospatial data visualization – Click Here (Galle Fort)

- 3D Geosptial Data Modeling and Integration with Cesium and Potree
  - I specialized in rebuilding and optimizing 3D meshes from complex geospatial datasets, handling high-resolution point clouds and terrain models. My programming work included mesh generation, error correction, and geodetic transformation routines. I integrated these datasets with Cesium and Potree, developing custom pipelines in Python and JavaScript to enable seamless streaming and interaction of massive geospatial scenes.
    - Project Demo Links for both 2D/3D – Click Here

- RealTower – AR-based Telco Tower Infra Management System for Dialog Axiata (Ongoing)
  - I engineered the geospatial data pipeline and AR-driven workflows that power antenna installation, inspection, and asset governance of the towers. This included building models to compute and validate azimuth, down tilt, and height from field sensors and UAV/LiDAR captures, then streaming those measurements into a digital twin for 3D planning and remote QA. I integrated tower libraries, 3D component views, and edit-mode tools. My role also covered technical writing, concept development, and end-to-end QA while implementing geospatial analytics for anomaly detection, trend analysis, and automated checklists.
    - Web App: Click Here (Email: rajitha@sulecoltd.com PW: towerdemo)

- CORSnet VRS-RTK Establishment and Cloud Integration
  - Led setup of the first CORS Virtual Reference Stations (VRS) network, architecting RTK/NRTK services. Deployed core services on Contabo cloud, implementing secure VPN, load-balanced casters, automated backups, and uptime monitoring. Integrated Stonex Cube-NRTK in the cloud, configuring mountpoints, stream parsing, and user/auth management. Standardized RTK data/file formats and transformation parameters.
- RINEX standardization for CORSnet RTK
  - Developed a Python-based RINEX standardization toolkit in a Linux Docker environment with Prof.

Vassilis Gikas and Prof. Vangelis Zacharis, automating filename conventions, header normalization, and epoch integrity checks for multi-GNSS streams. Implemented batch parsers/rewriters to harmonize observation and navigation files across receivers.

- National Watershed Coding and Geospatial Profiling — Research Proposal (Ongoing)
  - The proposal defines a multi-scale schema from basin to micro-watershed, encoding administrative indices (province, district, DSD), hydrography linkages, and terrain-hydrology attributes into compact, machine-readable codes, while enforcing interoperability across agencies and analytics platforms. The implementation approach formalizes end-to-end methods: satellite and airborne LiDAR derivatives for drainage and boundary extraction, GNSS-RTK ground control for positional integrity, and rule-based code assignment driven by land use, slope, storage capacity, and hazard metrics (flood and landslide indices).

SULECO (Pvt) Ltd. | Trainee Surveyor January 2023 to July 2023

- Visigeo Geospatial Analytics & Visualization Platform for 2D Data (Project Initiation)
  - Supported early-stage design and development for 2D/3D GIS visualization, prototyping data pipelines and UI workflows.

- Coconut Whitefly Threat Mitigation – DASIS Aerospace / NLDB (with Dr. Surantha Salgadoe)
  - I contributed as a geospatial analyst and developer, using multispectral drone imagery to map whitefly infestation, quantify coconut tree health, and track treatment performance across affected estates. In parallel, I designed and implemented automated coconut tree counting algorithms in Python

- Drone-Based Multispectral Vegetation Analysis for SENA Caterpillar Infestation Detection
  - Led the development and execution of a drone-based multispectral imaging project to identify SENA caterpillar infestations in vegetation through multi spectral image analysis. I used vegetation indices like NDVI to detect early signs of plant stress caused by pest activity. Also proposed efficient pest management interventions to protect crop health and optimize agricultural productivity.

- Remote Sensing Data Analysis for Paddy Harvest Estimation – Agricultural Ministry Pilot Project
  - Presented a pilot project proposal utilizing remote sensing and image analysis techniques to accurately estimate paddy harvest yields for the Agricultural Ministry. Used satellite and UAV multispectral imagery to monitor growth stages, evaluate vegetation health with indices like NDVI, and calculate expected yields through advanced spatial and spectral modelling. Designed data processing workflows to automate crop area delineation and biomass estimation.

- GNSS and land surveying
  - Havelock Road Cross Sections

- LiDAR surveying
  - Conducted terrestrial, mobile, and aerial LiDAR surveying and point cloud processing.

- Aerial surveying
  - Planned and flew missions; processed photogrammetry outputs (orthos/DSM/DTM) and integrated with GIS layers.

- Worked hands-on with Leica Geosystems, Stonex GNSS, and GreenValley Internationals, contributed as a resource person for their local industrial course works.
  - LiDAR360 MLS short-course series (designing curriculum, workflows, and demos)
  - Leica Infinty Post Processing short course (demos)
  - DJI Drone Technology and Drone Handling (demos)

Project C Foundation, UK | Research Intern *(Remote)* February, 2023 – September, 2023

- Did geospatial analytics to transform distress call logs into actionable mental-health risk intelligence for Boston. Built an end-to-end pipeline: geocoding and time-bucketing 911/helpline calls, kernel density and space-time cube hotspots, and spatiotemporal prediction using gradient boosting and Poisson regression to forecast call intensity at census-tract and block-group levels. Integrated social determinants of health (income, housing

instability, transit access, green space) and seasonal factors to improve model lift. Our team delivered a risk awareness plan mapping priority response zones, optimal outreach hub locations, and shift schedules by hour-of-week, with automated alerts for emerging clusters.

- Source Code: Click Here

Norden Impact, Stockholm, Sweden | Research Analyst *(Remote)* Sep, 2022 – June, 2023

- Researched and engineered data structures and algorithms for Hyperledger-based precision agriculture, designing on-chain/off-chain schemas for geospatial farm assets, sensor telemetry, and provenance.

Volunteering

SULECO Pvt Ltd's Corporate Social Responsibility (CSR) Projects

- IESL Event 2024 — Applications of Digital Twin Models in the Construction Industry; co-organized with senior IESL engineers and archaeologists (e.g., Raj Somadeva, Dr. Nilan Cooray); Sri Lanka's largest professional forum introducing Digital Twins.
- Tunnel Survey Technology Sessions — LiDAR for tunnel survey and drone tech for tunnel survey with Mahaweli Authority, in collaboration with Prof. Joel van Cranenbroeck.
- CORS Concepts workshops for SUSL and Survey Department with Prof. Vassilis Gikas and Prof. Vangelis Zacharis,
- Techno Exhibition — 2023, 2024, 2025.
- Geospatial Science Workshop — Information Technology Resource Development Authority.
- ISM Diyatalawa — Geospatial Science Events and Workshops (2023/2024/2025).
- EngEx — University of Peradeniya (2025).
- Industrial Days — Sabaragamuwa University, University of Moratuwa, University of Sri Jayewardenepura, Kotelawala Defence University
- SLIIT Silver Jubilee Exhibition (2025).
- One-Day Workshop for Future Innovators — FOUNTAIN Team, University of Peradeniya.
- Geospatial Science Workshop — General Sir John Kotelawala Defence University (KDU).
- Specialized LiDAR and Drone Workshops — Special Task Force, Ceylon Petroleum, Sri Lanka Army, Lanka Sugar.
- GNSS and LiDAR Workshops — Ceylon Electricity Board (CEB).
- SLAM and LiDAR Scanning — Airport and Aviation Services (Sri Lanka) Ltd (AASL).

Students for the Exploration & Development of Space (SEDS), Sri Lanka

- International Project Manager Sep, 2022 – June, 2023
  - Organized SpaceTalk sessions with Mike Mongo, Yudanjaya Wijeratne, Henry Thorpe; supervised Taprobane 3.0 ERC Competition, NASA Space Apps 2022, and Open Astro Night.
- Member Dec,2019 – Dec , 2023
  - Midnight Space Marathon Webinar Series
  - Taprobane v3.0 – Sri Lanka's first rover project
  - SEDS CubeSat Workshop

Students for the Exploration & Development of Space Sabaragamuwa University Chapter (SEDS Sabra)

- Founder, Chair Oct, 2020 – Nov, 2021
  - Launched and led SEDS SpaceArts 2021, SEDS Open Astro Night, SEDS SpaceHack, and SEDS Sci-Fi Talks.
  - Conducted morning Sun position calculation workshops and late-night star position calculation labs to build practical observational skills.

NASA SpaceApps Colombo (World Largest Hackathon – Sri Lankan Installment)

- Co Host March,2022- November, 2023
- Media Coordinator July,2021 - October, 2021

IEEE Geoscience and Remote Sensing Society (GRSS) | Member February, 2023 - Present

FIG Young Surveyors Network (YSN) | Member January 2023 - Present

Space Generation Advisory Council | Member Feb 2022 – Present

Graduation Thesis

Gammanpila, G.H.D.T.N. (2023). Landslide Risk Assessment and Dissemination Using MultiSource Spatial Parameter Integration for High-Risk Zones of Sri Lanka.

Publications

- Gammanpila, G.H.D.T.N., Rodrigo, U.H.G., Weerakoon, I.T., & Welikanna, D.R. (2023). A Combined Probabilistic Model and API to Support Landslide Risk Prediction and Dissemination.
  In: 9th International Conference of Sabaragamuwa University of Sri Lanka and 4th China - Sri Lanka Communication and Cooperation Forum Book of Abstracts, pp. 84.

- Rodrigo, U.H.G., Gammanpila, G.H.D.T.N., Weerakoon, I.T., & Welikanna, D.R. (2023). A WebBased Landslide Risk Dissemination Portal Incorporating Bayesian Probabilistic Risk Prediction Mechanism on Landslide Causative Parameters. In: RESCON PGIS Research Congress 2023 Proceedings, pp. 27.

Achievements

- Global Nominee, Local Impact Award - NASA SpaceApps Colombo 2021 (Team Leader, Pitcher, ML & Probabilistic Model, UI/UX Design)
- Observation Category Winner - NASA SpaceApps Colombo 2020 (Team Leader, Pitcher, Web Developer)
- 8th Place - Indian Rover Design Challenge (IRDC) 2021 Scientific Task Team Member, Image Model, Post Processing)
- 17th Place - European Rover Challenge (ERC) Finals 2022 (Scientific Task Team Member, Image Model, Post Processing)
- Finalist in following Hackathon events - HackX 2020, ActlnSpace Colombo 2020, Asia Pacific Innovation Challenge 2021, Microsoft Imagine Cup SEA NM Regional Competition (Earth Category)
- Selected for Social Innovation Camp - HackaDev Social Innovation Challenge 2020
- Chair of the Year - SEDS Sri Lanka Award Ceremony 2021

Certifications

- GPM Mentorship Program, University of Coimbra (May 2024)
- Abstract Publication – 9th ICSUSL, Sabaragamuwa University of Sri Lanka (Dec 2023)
- Research Internship (GIS), Project C Foundation (Jul 2023)
- SGC Art Competition – Global Top 10, Space Generation Advisory Council (2024)
- SGC Art Competition – Global Top 10, Space Generation Advisory Council (2022)
- Spatial Analysis and Mapping with SuperMap, SuperMap GIS (Oct 2022)
- Spatial Data Analysis and Mapping with SuperMap, SuperMap GIS (Sep 2022)
- CubeSat 2.0 Workshop Participation, SEDS Peradeniya University Chapter (Apr 2022)
- NASA Space Apps Galactic Problem-Solver, NASA Space Apps Challenge Zurich (Oct 2021)
- Biomedical & Earth Science Division – Certificate, SEDS SLTC (Aug 2021)
- Certificate of Appreciation – “Gaweshana” E-Magazine, SEDS Kelani (Aug 2021)
- EO Dashboard Hackathon, NASA (Jun 2021)
- SEDS Space Arts 2021, SEDS Sri Lanka (Apr 2021)
- Virtual Drone Workshop – Certificate of Participation, SEDS Kelani (Mar 2021)
- Provisional Discovery of Main Belt Asteroid 2020 JM8, NASA (Jan 2021)
- Provisional Discovery of Main Belt Asteroid 2020 KV13, NASA (Jan 2021)
- Remote Sensing & GIS Applications, Indian Institute of Remote Sensing (IIRS), ISRO (Dec 2020)
- Remote Sensing & Land Degradation, Indian Institute of Remote Sensing (IIRS), ISRO (Dec 2020)
- Tech Talk – Astronomy, Astrophotography & Post-Processing, SEDSKCT (Dec 2020)
- Tech Talk – Astrophysics, SEDSKCT (Dec 2020)
- Tech Talk – Orbital Mechanics & Rocket Propulsion, SEDSKCT (Dec 2020)

- Tech Talk – Rovers, SEDSKCT (Dec 2020)
- GIS – New Trends for GIS Users, GIS Solutions (Pvt) Ltd (Dec 2020)
- Storytelling with ArcGIS – For GIS Users, GIS Solutions (Pvt) Ltd (Dec 2020)
- Understanding GIS – For Beginners, GIS Solutions (Pvt) Ltd (Dec 2020)
- Aquilex'21 Science Fiction Short Story Appreciation, SEDS Peradeniya (2020/21)
- Chapter Lead – Inter-University Space Quiz 2020, SEDS Sri Lanka (Nov 2020)

Skills

- Technical Skills

    - GIS and Remote Sensing Software: ArcGIS Pro, ArcGIS Online, QGIS, LiDAR360, LiDAR360 MLS, LiPower, Geo Mapper, SNAP, SuperMap, DJI Terra, AgriSoft, ERDAS Imagine, DJI Pix4D
    - GNSS Tools: Stonex Cube a-RTK, Leica Infinity, Leica Viva
    - 3D Modeling: Bentley, 3D CAD software, Blender
    - Cloud Platforms: Contabo, AWS S3, Potree
    - Geospatial Visualization Applications: Cesium, Dashboards
    - Databases: Postgresql, SQL, PostGIS
    - Frameworks: React Native, Flutter, React (modern frameworks for cross-platform and web app development)
    - API Testing Tools: Postman
    - Project Management Tools: Trimble Connect, Trimble Business Center, ISETIA
    - Remote Sensing and Spatial Data Process and Analysis
    - Programming Languages: Python, Java, JavaScript, C, C++, PHP, R, HTML, CSS, Kotlin
    - GIS Application Development and Customization
    - Drone Piloting, GNSS and Optical Surveying, LiDAR Scanning and Processing, Terrestrial Laser Scanning and Processing
    - Web Mapping, Open-Source GIS Platforms
    - Data Modeling and Advanced Statistics
    - Design and Drafting Software: AutoCAD, Autodesk Civil 3D
    - Creative Software: Adobe Photoshop, Illustrator, Clip Studio Paint

- Soft Skills:

    - Leadership and Project Management (Manager, Chair of SEDS Sri Lanka, Event Organizer)
    - Project Management
    - Teamwork in Multicultural and Multidisciplinary Environments
    - Communication and Collaboration with Technical and Non-Technical Stakeholders
    - Problem-Solving and Analytical Thinking
    - Workshop and Event Organization (Media Coordination, Budget Planning)
    - Creative Content Creation (Comic Writing, Short Films, Podcasting, YouTube Hosting)
    - Adaptability and Proficiency in Diverse Environments
    - Initiative and Innovation (Winning Hackathons like NASA SpaceApps, Research Projects, Taprobane v3.0)

Language Skills

- Mother Tongue: Sinhala
- Other Languages
    - English
    - Tamil

Interests

- Creative Arts
- Photography, Videography
- Comic Writer and Artist

- Filmography
- Podcasting

Non-Related References

- Dr. D.R. Welikanna, Senior Lecturer, Faculty of Geomatics, Sabaragamuwa University of Sri Lanka
  Email: drw@geo.sab.ac.lk
  Telephone: +9477 158 8007

- Mark Sorensen, Chairman, GPC Group of Companies, GPC Global Information Solutions LLC
  Email: gpci@icloud.com
  Telephone: +971 50 641 0854

- Chaminda Senevirathne, Director, SULECO Pvt Ltd.
  Email: operations@sulecoltd.com
  Telephone: +94773301274