

Sahan Gunawardana

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EDUCATION

B.Eng. Mechanical Engineering

Memorial University of Newfoundland, St. John's, NL

Graduated 2026

EXPERIENCE

Tick Stick Corp.,

Contract Embedded Systems Designer

April 2026 – Present

- Leading the mechanical and electrical development of a handheld AI-enabled consumer electronic device from early prototypes toward mass production.
- Developing the product architecture and selected production-ready components with consideration for cost, availability, reliability, assembly, and supply-chain scalability.
- Designed a custom embedded AI inference computer incorporating a RK3566 processor, Hailo-8 NPU, integrated USB-C power delivery, Li-Po battery management system and MIPI camera interface.
- Prepared the electronic and mechanical design for regulatory testing, including FCC electromagnetic compatibility and emissions certification, through interface filtering, grounding, shielding, PCB-layout, and enclosure-design considerations.
- Collected and labelled image datasets and trained a neural network for real-time tick detection on embedded hardware.

Duxion Motors Inc., St. John's

Electronic Systems Specialist

January 2025 – December 2025

- Proposed and architected a safety-oriented “Propulsion Supervisor” system tasked with operating Duxion's electric motor when integrated in civil aviation aircraft.
- Implemented FPGA logic for real-time sensor data acquisition & control interfaces and developed supporting embedded control & monitoring firmware.
- Applied requirements traceability, verification planning, configuration control, and evidence-based development practices aligned with RTCA and military aerospace standards.
- Conducted PCB bring-up and verification: authored structured test plans, procedures, acceptance criteria, and maintained defect logs and test evidence for design iterations.
- Drove design-for-reliability practices across hardware incorporating protection and fault containment, derating using MTBF reasoning, and robust documentation suitable for aerospace applications

Venato Robotics Inc., St. John's (Part-Time)

CEO & Co-Founder, Design Lead

April 2022 – Present

- Developing sensing hardware for GPS-denied autonomous navigation of VTOL aircraft and maritime vessels
- Leading mechanical and electrical development of sensor hardware toward Technology Readiness Level 7

Memorial University, Intelligent Systems Laboratory, St. John's (Multiple Phases)

Mechanical/Embedded Designer

January 2021 – April 2026

- Led the design, fabrication, integration, and testing of a Visual-LiDAR Odometry and Mapping payload for the NRC Bell 412 Advanced Systems Research Aircraft.
- Completed airworthiness-focused structural verification through FEA, CFD, bolted-joint analysis, engineering documentation, and sine-sweep vibration testing of a custom isolation mount.
- Executed field integration and data-collection campaigns by deploying payloads on a DJI M600 and ground vehicle for preliminary validation.
- Designed and tested system management PCBs integrating IMU, GNSS, environmental sensing, and RS-232 interfaces using Altium Designer.
- Designed V2 payload iteration with space-optimized embedded electronics and mil-spec hardware and successfully navigated the NRC airworthiness review through to fit-checks and assembly completion.
- Built a distributed architecture by designing a 4-payload hub enabling fusion of multiple independent odometry pipelines.

Airtell Aerospace Inc., St. John's (Part-Time)

August 2019 - Present

CEO & Co-Founder, Design Lead

- Leading a team of 15 mechanical, electrical, software, and computer engineering undergraduate researchers, and Ph.D. candidates toward developing a fixed-wing, VTOL-capable unmanned aerial vehicle (UAV) for Intelligence, Surveillance and Reconnaissance (ISR) applications
- Successfully designed, manufactured, and tested a 2-meter wingspan carbon fiber UAV
- Designed and manufactured fiberglass molds for small volume production of the UAV
- Developed, manufactured and tested a custom flight computer incorporating a CM5, STM32 for flight controls and a suite of sensors needed to control Airtell's UAVs

Centre for Research and Development, Ministry of Defense. Sri Lanka

May 2018 – August 2019

UAV Designer

- Worked as an aerodynamic and structural designer for two UAV development programs
- Conducted CFD analysis on the UAVs to determine Lift/Drag coefficients of non-uniform airfoils
- Developed a short-range high-speed UAV intended to be used as a testing platform for guidance, navigation, and control (GNC) algorithms developed under the guided missile development program
- Designed and manufactured a mid-range, fixed-wing UAV for use by the Sri Lankan Coast Guard for maritime patrol
- Worked remotely on structural and material optimization leading to a 20% greater payload capability of the UAV
- Conducted CFD analysis and buoyancy simulations for an Underwater ROV development program

Publications

Interchangeable Visual Inertial LiDAR Odometry and Mapping Payload Unit for Aerial Vehicles

- *IEEE Open Access Journal (2024 Accepted)*
Authors: Ravindu Thalagala, Sahan Gunawardana, Oscar De Silva, Awantha Jayasiri, George K.I. Mann, Raymond G. Gosine

Design of a Visual-Lidar Odometry and Mapping Sensor Payload for a Full-Scale Vertical Takeoff and Landing Vehicle.

- *IEEE Newfoundland Electrical and Computer Engineering Conference (NECEC 2022)*
Authors: Sahan Gunawardana, Ravindu Thalagala, Oscar De Silva, George K.I. Mann, Awantha Jayasiri

Professional Training

Fundamentals of Flight Dynamics Certificate, Sri Lankan Air Force (SLAF)

2017

Sri Lanka Airforce Base, Ratmalana, Sri Lanka

Key Skills

Mechanical Design

- Design for Manufacturing (additive, subtractive, sheet metal, composite)
- FEA & CFD Analysis
- CNC (Haas), Manual Lathe, Mill operation
- Composite manufacturing (carbon fiber, fiberglass, Kevlar)
- Autodesk Inventor
- SolidWorks
- Fusion 360
- Autodesk Nastran FEA
- Autodesk Computational Fluid Dynamics (CFD)
- MATLAB

Embedded Design

- RTCA DO-178C, DO-254, DO-160 familiarity
- MIL-DTL-38999, MIL-W-22759, MIL-DTL-27500 familiarity
- FPGA based digital system design
- Altium Designer
- Linux OS
- Robot Operating System (ROS)
- Programming in C++, VHDL, Verilog