Sahan Gunawardana

(709) 771-4544 | mgunawardana@mun.ca | St. John's, NL A1B1T6
Portfolio: https://www.sahanmg.com | www.linkedin.com/in/sahan-mg

EDUCATION

B.Eng. Mechanical Engineering   **Expected Graduation Apr 2026**
Memorial University of Newfoundland, St. John's, NL

EXPERIENCE

Duxion Motors Inc., St. John's   **January 2025 – Present**
Electronic Systems Specialist
- Proposed and architected a safety-minded "Propulsion Supervisor" system tasked with operating Duxion's electric motor when integrated in civil aviation aircraft.
- Implemented FPGA logic/FSMs for real-time sensor data acquisition & control interfaces and developed supporting embedded control & monitoring firmware.
- Applied RTCA and MIL-spec aligned development discipline (DO-178-style objectives mindset, verification focus, traceability and evidence-driven engineering) to avionics-grade embedded development.
- 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)   **April 2022 – Present**
CEO & Co-Founder, Mechanical Design Lead
- 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

Tick Stick Corp., (Remote, Part-Time)   **January 2022 – Present**
Contract Mechanical, Electrical Designer
- Designed a custom carrier board for a Raspberry Pi CM4 embedded computer with integrated USB C power delivery, Li-Po battery management system and MIPI Camera interface.
- Collected imagery data and trained a neural network to detect ticks in real time.
- Designed a mechanical enclosure for a hand-held tick-detection wand. The enclosure is designed to be mass-manufactured using injection molding and houses various sensors

Memorial University, Intelligent Systems Laboratory, St. John's (Multiple Phases)   **January 2021 – Present**
Mechanical Designer
- Led end-to-end design, fabrication, and test of a Visual LiDAR Odometry & Mapping (VLOAM) sensor payload for integration on the NRC Bell 412 Advanced Systems Research Aircraft.
- Delivered airworthiness-ready structural verification: performed FEA/CFD, manual bolted-joint calculations, and produced comprehensive engineering documentation to satisfy NRC FRL review requirements.
- Engineered a custom vibration-isolation mount and validated performance via sine-sweep vibration testing using a hydraulic actuator with the payload installed.
- Executed field integration and data-collection campaigns by deploying payloads on a DJI M600 and ground vehicle for preliminary validation.
- Created lab-wide document control procedures, naming conventions, and templates, improving consistency and productivity across multiple projects.
- 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.
- Designed, built, and tested embedded systems hardware: developed prototype and production Systems Management PCBs in Altium (Atmel 2560), integrating IMU/GNSS/environmental sensing and RS-232 interfaces.
- Built a distributed architecture by designing a 4-payload hub enabling fusion of multiple independent odometry pipelines; integrated hub + payloads on drone/vehicle platforms for data capture.

Airntell Aerospace Inc., St. John's (Part-Time)   **August 2019 - Present**
CEO & Co-Founder, Design Lead
- Leading a team of 11 mechanical, electrical, software, and computer engineering undergraduates, 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 sensor needed to control Airntell'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