

RAYHAN SATRIO ADI NURDJAMAN

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EDUCATION

National University of Singapore

Aug 2024 - Jul 2028 (Expected)

Bachelor of Engineering, Mechanical Engineering, Robotics Spec & Computing Minor

- Fully-funded Beasiswa Indonesia Maju Scholarship
- GPA : 4.88 / 5.0

SKILLS

CAD & Mechanical: SolidWorks, GD&T, Rapid Prototyping (3D Printing), Assemblies, Drawings, Waterproofing
Embedded & Software: C++, Java, Python, STM32, CMake, Git, CI-CD, Microsoft Excel, Linear Algebra
Language: Bahasa Indonesia and English

EXPERIENCE

Operations Intern, PT Samudera Perkapalan Indonesia

Jun 2026 - Jul 2026

- Conceptualised and built an automated Excel verification model to cross-reference vendor routes and fuel baselines against logs across 5 vessels, reducing manual audit times and flagging data outliers.
- Reviewed RightShip qualification standards for cranes and machinery spaces of over 40 items and conducted mock on-site inspections to verify compliance against documented specifications.

Mech IC, Hornet X SAUVC Team

Sep 2024 - Mar 2025

- Led 8-person mechanical sub-team through design and assembly of Hornet X Robot for SAUVC, coordinating across multiple subsystems while supervising design standards and managing timelines.
- Restored the Hornet 9 Robot to working status by reverse engineering and 3D printing replacement parts in SolidWorks, facilitating software team to prototype and test systems in parallel with Hornet X development.
- Designed internal frame housing electronics, provided design feedback across mechanical subsystems, resolved assembly issues in SolidWorks, and verified O-ring selection to ensure waterproofing.

PROJECTS

Solo Developer, 20:1 Cycloidal Actuator

Jan 2026 - Present

- Designed and simulated a 20:1 cycloidal drive actuator in SolidWorks, achieving backdrivable operation and $<2^\circ$ backlash through iterative 3D-printed prototype testing.
- Created custom open loop motor control circuitry using STM32 microcontrollers and NEMA 17 steppers.

Solo Developer, C++ Hardware-Accelerated 2D Renderer

Jul 2025 - Present

- Built a C++ 2D rendering engine from scratch using SDL_gpu for hardware acceleration, managing CMake build architecture with multi-library submodule dependencies (SDL3, libraw).
- Created custom render command parser interfacing Clay layout engine with SDL_gpu backend, allowing real-time UI rendering at 60 FPS.

Lead Developer, Real-Time Circuit Solver NUS Orbital 25 Artemis Team

May 2025 - Aug 2025

- Architected and developed "Gauss Chamber," a physics-based puzzle game in Godot, applying electromagnetism and circuit theory, earning placement in top 4% of 500 teams for extensive effort.
- Developed a SPICE-inspired physically accurate circuit solver in GDScript leveraging linear algebra while utilising behaviour pattern to allow extensibility and interactivity, achieving real-time performance at 120 FPS.
- Established 2-week sprints, feature branches, GitHub Actions for CI/CD, issue tracking, and code reviews, enabling faster deployment, upholding code quality, and ensuring milestone completion.

CO-CURRICULAR ACTIVITIES

Events Head, Helix House Publicity

Aug 2025 - Apr 2026

- Directed a 10-member media production team, organising equipment logistics and operational scheduling to deliver technical photography coverage across all house and block events.