RAYMOND TIMOTHY TUMIWA

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I am a Research Master's student in Control Science and Engineering at the UM-SJTU Joint Institute. My research within the Surgical & Intelligent Robot & Innovative Unmanned Systems (SIRIUS) Laboratory focuses on advancing open-source surgical robotics through mechatronic integration and real-time control. With a Bachelor's degree in Electrical Engineering from The Chinese University of Hong Kong, Shenzhen, I bridge the gap between hardware-software co-design and complex robotic control. I am dedicated to developing accessible, high-precision robotic platforms like opensurgbot and am committed to tackling engineering challenges with persistence and a collaborative work ethic.

Education Level

Shanghai Jiao Tong University - **Shanghai, China** Sep 2025 - Feb 2028 (Expected)

Master of Science in Control Science and Engineering, 3.62/4.00

- Supervision: Prof. Yutong Ban, SIRIUS Laboratory.
- Research: Mechatronics and surgical robotics at the UM-SJTU Joint Institute; focus on open-source platforms.

The Chinese University of Hong Kong, Shenzhen - **Shenzhen, China** Aug 2021 - Dec 2024

Bachelor of Engineering in Electronic Information Engineering, Second-Class Honours Upper Division

The University of British Columbia - **Vancouver, Canada** Jul 2024 - Aug 2024

- Vancouver Summer Program: Introduction to Robotics (94.8%) and Roboethics (86%)

Work Experiences

UM-SJTU Joint Institute (University of Michigan-Shanghai Jiao Tong University) - **Shanghai, China** Sep 2025 - Present

Mechatronics Engineer (Research Intern)

- Surgical Robotics Development: Contributing to the development of opensurgbot, an open-source surgical robotics platform, within the SIRIUS (Surgical & Intelligent Robot & Innovative Unmanned Systems) Laboratory.
- Real-time Embedded Control: Designing and implementing high-performance control loops on STM32 microcontrollers using C and the HAL library to ensure precision instrument manipulation.
- Mechatronic System Integration: Designing the synergy between mechanical hardware and electronic control systems for medical applications under the supervision of Professor Yutong Ban and Professor Shane Johnson.

Soft Robotics Laboratory CUHK(SZ) - **Shenzhen, China** Aug 2024 - Present

Final Year Project Student

- Conducted experiments and prototype testing for the '3D Printed Soft Electrostatic Loudspeaker' project in the Soft Robotics Lab under Professor Zhu Jian at CUHKSZ.
- Utilized CAD and slicing applications such as Stratos to design and optimize 3D-printed components, achieving a performance improvement with a 50% maximum gain.

The Chinese University of Hong Kong, Shenzhen - **Shenzhen, China** Aug 2024 - Dec 2024

Undergraduate Student Teaching Fellows (USTF)

- Prepared and delivered tutorial slides with practice problems for ECE3510: Digital Signal Processing, enhancing the clarity of lecture content for a class of 20 undergraduate students.
- Compiled and reviewed homework assignments and projects using MATLAB, Python, and LaTeX, ensuring alignment with course objectives and providing effective learning resources.
- Developed step-by-step solutions to homework problems via Blackboard, improving student comprehension and engagement in digital signal processing concepts.

Skills, Achievements & Other Experience

- **Projects** (2023): Microprocessor Ball Game Improvement, Audio Signal Processing using Matlab
- **Achievements**: Partial Tuition & Full Accomodation Scholarship
- **Soft Skills**: Microsoft Office, Python, Electrical Hardware
- **Language**: Indonesian (Native), English (IELTS 7.5), Chinese (Conversational), German (Beginner)