

RUODI (TINAH) YUAN, BSc

Canadian Citizen | ☎ +1(778)682-7471 | ✉ ruodi.yuan@mail.utoronto.ca | 🔗 [LinkedIn](#) | 📍 Toronto, Canada | [Personal Portfolio](#)
Seeking internships from May 2027 to Sept 2028

EDUCATION

University of Toronto St. George

Toronto, Canada

BASc in Mechanical Engineering + PEY Co-op

Sept 2025 – Apr 2030 (expected)

University of Toronto Scarborough

Toronto, Canada

Honours Bachelor of Science; Life Sciences (Health Sciences Stream); cGPA: 3.90/4.00 | University of Toronto Scarborough Dean's List

Sept 2024 – Apr 2025

FUNCTIONAL EXPERIENCE

- Designed and validated **Formula SAE drivetrain systems** using **SolidWorks** for 3D modeling and assembly integration; supported **AWD EV architecture development**, PM motor assembly, rotor alignment tooling, and mechanical packaging of motor mounts, shafts, bearings, and cooling hardware.
- Developed **simulation and analysis workflows** using **MATLAB, Simulink, and ANSYS**; digitized motor efficiency maps, built lookup-table tools, evaluated endurance-event heat loads, and validated drivetrain and cooling components under representative operating conditions.
- Produced **GD&T-compliant drawings**, cost analysis, and manufacturing documentation for machined drivetrain components; applied **DFM/DFA**, tolerance planning, supplier-ready drawing practices, and fabrication constraints to support machining and assembly.
- Designed and iterated **aerospace and robotic mechanisms** using **SolidWorks**, including payload pickup/release systems, landing gear integration concepts, custom robot housings, and **3D-printed prototypes** validated through hands-on testing and refinement.

SAE EXPERIENCES

University of Toronto Formula SAE Racing

Toronto, Canada

Vehicle Dynamics Lead

June 2026 - Present

- Led **vehicle dynamics simulation and performance optimization** using **VI-CarRealTime, MATLAB, Dil and Adams Car**, analyzing lap-time sensitivity, vehicle response, and handling performance across multiple vehicle configurations.
- Developed a **vehicle performance envelope** using simulation data to characterize acceleration, braking, cornering, and tire-force limits across representative operating conditions.
- Performed **mass sensitivity analysis** and established vehicle mass targets projected to reduce lap time by **approximately 3%** relative to the previous-year vehicle.
- Developed and maintained vehicle dynamics analysis workflows in **MATLAB**, including **automated simulation post-processing**, parameter sweeps, and performance visualization to support setup and design decisions.
- Performed **suspension, and steering analysis**, including suspension-link load correlation between **Adams Car simulations** and vehicle dynamics models within **20% difference** to validate predicted loads.
- Supported **DIL testing and validation**, coordinating test parameters, and maintaining test workflows
- Maintained and compiled **vehicle dynamics software PRs**, supporting integration, validation, and deployment of simulation and testing updates.

Drivetrain Team Member → Drivetrain Team Lead

Sept 2024 - June 2026

- Co-led **drivetrain architecture development** for the team's **first AWD Formula SAE EV race car** and performed PM motor assembly.
- Identified **rotor alignment** as a key challenge in PM motor assembly due to strong magnetic attraction forces between the rotor and stator; researched industry assembly practices and designed a **custom alignment tool** to enable safe, precise, and repeatable rotor installation.
- Produced **GD&T-compliant mechanical drawings** for the inboard motor mount, planet shafts, and motor bearing, along with cost analysis and manufacturing process documentation, to support accurate fabrication and machining.
- Designed a comprehensive **dual inverter cooling system** using **Simulink**, optimizing thermal management for enhanced performance and efficiency, with **SolidWorks** for CAD and validated components with **ANSYS FEA** to ensure structural integrity under operating loads.
- Sized the system from a **heat load estimate** by digitizing the motor's power-efficiency map (Fischer) into a high-resolution lookup table using automated **MATLAB** tools and integrating it into a **Simulink vehicle model** to evaluate motor efficiency continuously through a simulated endurance event, establishing the thermal boundary condition for the cooling system simulation.
- Participated in **Formula SAE Michigan 2026**, delivering design presentations on drivetrain architecture and engineering decisions to industry judges as part of the competition's design judging event.

University of Toronto Aerospace Team

Toronto, Canada

Unmanned Aerial Systems – SAE Payload Specialist

June 2026 - Present

- Responsible to lead the design of an **autonomous moving payload** for the **SAE Aero Design Advanced Class mission**, focusing on lightweight mechanical systems and reliable autonomous operation.
- Developing **navigation, capture, and release mechanisms** through **CAD, rapid prototyping, and engineering trade studies** to maximize mission reliability.

Unmanned Aerial Systems – SAE Structure Member

Sept 2025 - June 2026

- Designed and iteratively refined **payload pickup and release mechanisms** for a **hybrid V/STOL aircraft** using **SolidWorks**, validating designs through **3D-printed prototypes** to improve landing accuracy and reduce mechanical instability during deployment
- Collaborated cross-functionally with **control and avionics teams** to align mechanical design with design requirements.
- Contributed to **landing gear design and fuselage structural integration**, designing for accessibility to simplify maintenance and gaining hands-on experience in composite and mechanical assembly.

ADDITIONAL EXPERIENCES

UofTHacks 13 (Project Link)

Toronto, Canada

2nd Place – Hack the Human-Robot Experience

Jan 2026

- Built **Red Lamp**, a companion robot for students addressing isolation and burnout by providing emotionally aware encouragement during independent study sessions.
- Integrated hardware systems using a LeLamp kit, **Raspberry Pi, sensors, LEDs, and custom 3D-printed components**, transforming a standard robot into a responsive, companion-focused device.
- Debugged and optimized **hardware–software interaction** by troubleshooting power instability, loose wiring, and faulty components through voltage testing and iterative assembly, achieving **reliable real-time responsiveness**.
- Adapted system architecture by incorporating **Arduino components** after Raspberry Pi connectivity failures, improving **system stability and overall performance** under real-world constraints.

2025 Engineering Business Future Case Competition

Toronto, Canada

3rd Place Winning Team

Oct 2025

- Worked 3 other engineering students to develop a **marketing campaign** for Vick's Early Defense Nasal Spray, aiming to increase household penetration by **10% in a year**.
- Identified a key gap – lack of exposure and reliability – and built strategy around tackling it using frameworks such as **Porter's Five Forces and PESTLE**.
- Delivered an **evidence-based presentation** that impressed judges with its clarity, feasibility, and analytical depth.

TECHNICAL SKILLS

- Programming & Tools:** Python, C, C++, Arduino, JavaScript, HTML, MySQL, Microsoft Office Suite.
- Engineering & Technical:** SolidWorks, MATLAB, Simulink, Catia, ANSYS, machining and manufacturing processes, Vi-Grade CarRealTime, rFpro, ADAMS Car.
- Language:** English(native), Chinese(native), Japanese(elementary).

LICENSES & CERTIFICATIONS

Certified 3DEXPERIENCE Mechanical & Shape Designer - CATIA Associate – Issued by Dassault Systèmes

July 2026

Certified SOLIDWORKS Associate (CSWA) – Issued by Dassault Systèmes

Dec 2025

Basic Machining: Lathe, Mill, Drill Press – Issued by George Brown College

Oct 2025