Frank Hao

1054 Runnymead Cres, Oakville | Frankie.hao@mail.utoronto.ca | (647) 987-4449

PROFESSIONAL EXPERIENCE

Engineering Consultant - University of Toronto Sustainability Office *January 2025 - April 2025*

- Developed a solar-powered microgrid proposal for the University of Toronto Medical Sciences Building, integrating photovoltaic and wind systems to offset 5% of annual energy consumption, validated through quantitative energy-output modeling.
- Simulated energy conversion efficiency using Python and MATLAB, applying thermodynamic and materials science principles to forecast system performance across seasonal conditions.
- Performed cost–benefit and feasibility analyses combining Financial forecasting and sustainability metrics to support long-term investment justification.
- Collaborated with a multidisciplinary team to present findings to faculty and client, refining complex technical insights into concise, client-ready deliverables.

Marketing Strategy Consultant - P&G Engineering Case Competition *September 2025*

- Designed a market research study combining survey analysis, demographic segmentation, and behavioral frameworks to pinpoint product awareness deficiencies across Canadian consumers.
- Developed a multi-variable ROI model using Python (Pandas) and Excel, integrating demographic data and price-elasticity analysis to forecast campaign performance in the Canadian market
- Proposed an integrated advertising campaign that projected a 12% increase in household penetration.
- Delivered a 10-minute executive presentation to industry judges, demonstrating persuasive communication and data visualization skills under time-constrained conditions.

Personal Project - FPV drone development *May 2025 - Present*

- Designed and assembled a fully custom FPV drone from carbon frame to flight controller, integrating BLDC motors, ESCs, and LiPo power systems.
- Programmed and tuned flight-stabilization algorithms in Python, optimizing PID control loops to reduce vibration amplitude and signal latency
- Modeled and optimized component layout in SolidWorks, perfecting center-of-mass alignment and enhancing aerodynamic responsiveness.
- Conducted post-flight data analysis to validate system reliability and guide future design iterations.

EXTRACURRICULARS

Junior Mechanical Designer - University of Toronto Robotic Space Exploration Team *August 2025 - Present*

- Modeled and optimized the suspension linkage of a planetary rover in SolidWorks, performing FEA simulations to increase chassis rigidity while reducing structural mass by 8 %.
- Integrated drivetrain and suspension assemblies in collaboration with electrical and control teams
- Documented design revisions and test outcomes for compliance checks, enhancing clarity and traceability.

EDUCATION

Bachelor of Applied Science, Mechanical Engineering, Minor in Business certificate
University of Toronto | Graduates June 2028

- **Relevant Coursework:**
    - Fundamentals of computer programming
    - Material Science
    - Solid Mechanics
    - Physical Chemistry
    - Earth System Science
    - Engineering Analysis
    - Mechanical Engineering Design
    - Fundamentals of Accounting and Finance

SKILLS

- Solidworks, ANSYS/FEA simulation
- Python (Pandas, Numpy, Matplotlib)
- MATLAB
- Quantitative analysis and data modeling
- Excel, Powerpoint and Technical writing
- Project management and collaboration