Zayd Houachmi

Seeking Summer 2027 mechanical engineering co-op — design, aerodynamics, energy

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Education

University of Ottawa — Ottawa, ON
B.A.Sc. Mechanical Engineering (Co-op) — *Sept. 2025 – June 2029*

Experience

Renewable Energy Intern — June – Aug. 2026
Greenard Consulting — *Casablanca, Morocco*

- Ran a wind-resource assessment in **WAsP**: wind atlas, 180-point resource grid and turbine-site AEP
- Produced **3.15 GWh/year net** at a 7.85 m/s hub-height mean wind speed for the selected turbine site
- Wrote an **8-module Python/Streamlit** yield tool: Jensen and Ainslie wake models, Runge-Kutta, six-factor loss cascade
- Found a single-direction wind assumption exaggerates wake loss (**62%** on the third turbine in a row), motivating a 12-sector rose

Formula SAE — Aerodynamics Team — Sept. 2025 – Present
uOttawa Formula One Student Group — *Ottawa, ON*

- Designed front and rear wing assemblies in SolidWorks within FSAE rules-box and packaging constraints
- Ran full-car CFD predicting **320 N downforce** at 65 km/h at a coefficient of lift of –1.91
- Iterated wings, undertray, diffuser and sidepods in **ANSYS CFD**; front wing reached Cl –0.800, Cd 0.109
- Validated CFD against suspension-travel data: measured downforce within **10%** of prediction at 65 km/h
- Manufactured aerodynamic surfaces by composite layup: carbon fibre mould prep, layup, curing and assembly

Founder — Aug. 2026 – Present
Tutoring Ottawa — *Ottawa, ON*

- Founded and operate a bilingual tutoring business for Grades 7–12; manage client acquisition directly
- Built the booking platform in **Next.js/TypeScript**: server-validated API, Supabase/Postgres with row-level security
- Hardened intake with rate limiting, honeypot filtering, input sanitization and consent capture

Client Services Representative — June 2025 – Present
Norton Rose Fulbright — *Ottawa, ON*

- Coordinate weekly corporate meetings for groups of 40 to 100 attendees under confidentiality requirements

Junior STEM Instructor — May 2026 – Present
Young Engineers — *Ottawa, ON*

- Teach mechanical engineering concepts to 16 children aged 8–10 twice weekly through hands-on structure builds

Projects

Clip-on Visual Shield | *Designer, SolidWorks — in progress* — Oct. 2026 – Present

- Designing a foldable 3D-printed shield that clips onto a client's own glasses to block peripheral distraction
- Modelled the full assembly in SolidWorks: chassis, side panels and removable lower flaps on a reference frame
- Set targets of $\leq$**20 g**, $\leq 80^\circ$ horizontal view and under $50 cost; bill of materials now $39.95

Blood-Sample Swab Drying System | *Team Lead, Ottawa Police Service client* — Oct. – Dec. 2025

- Led a 5-person team through three client design reviews to a tested prototype in a 10-week term
- Modelled parts in **SolidWorks** for a 20×20×30 cm acrylic enclosure; contamination testing set 3–5 cm spacing
- Built Arduino/DHT11 instrumentation with LCD readout and HC-05 Bluetooth streaming data to Excel
- Load-tested 3 mm panels from 0.98 to 9.81 N, confirming elastic response to 6.9 N with no permanent deformation

SpeakGov | *Solo, Hack the Hill III — speakgov.com* — Sept. 2026

- Built a bilingual (EN/FR) app that fills a government benefit form from spoken or typed answers
- Next.js/TypeScript with Gemini field extraction, ElevenLabs spoken follow-ups and Auth0 login with save and resume

Leadership

Founder & President, STEM Club — Feb. 2025 – June 2025
De La Salle High School — *Ottawa, ON*

- Founded a student organization and grew it past **50 members** in one semester with faculty backing
- Presented to roughly **1,000** students and staff; ran a peer-tutoring program for 10–30 students

Technical Skills

Engineering: SolidWorks, ANSYS CFD, WAsP, numerical modelling and validation, Arduino, composite layup
Languages: Python (NumPy, SciPy, Streamlit), C, C++, C#, JavaScript, HTML/CSS, Visual Basic
Web: Next.js, TypeScript, React, Supabase (Postgres), Vercel
Software: Microsoft Excel, Word, PowerPoint
Spoken: English (fluent), French (fluent, DELF certified), Arabic (native)