Robert Vigneron

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Education

University of Waterloo Sept 2025 – Present
B.A.Sc in Mechatronics Engineering
Bell High School – French Immersion Congregated Gifted Program Sept 2021 – June 2025

- Leadership Experience: Relay For Life Head, Student Council Leader
- DELF B2 Certification

Experience

Network Infrastructure Intern July 2024 – August 2024
Nokia Kanata, ON

- Displayed quick learning and initiative by researching methods of statistically analyzing packet sequences in order to compare them using Python and SQL
  - Dimensionality reduction methods to compress complex data sets
  - Statistical distance metrics to compare sequences
- Collected and managed experimental data to select the most efficient distance metric given a dataset
- Engineered and professionally demonstrated a tool to compare packet sequences within required timelines

Mechanical Team Lead June 2022 – May 2025
Spark Youth Robotics (FRC 8729) Kanata, ON

- Exercised communication as a lead for 2 years, teaching 50 members technical skills to be contributing members
- Demonstrated creativity and problem solving while prototyping and fabricating 3 multi-mechanism robots which competed in 8 FIRST Robotics competitions including 3 provincial championships
- Spearheaded the 2025 design cycle and troubleshooting of all robot mechanisms to build a shooting robot
- Created a full CAD design (link here) in Onshape and bill of materials for the team's 2025 robot
- Selected appropriate motors, motor controllers, and encoders for wheels, joints, and flywheels

Driveline Member September 2025 – Present
University of Waterloo Formula Electric Waterloo, ON

- Designed a static test bench for the car's differential to analyze it's properties including coefficients of friction
  - Manufactured each part precisely with the tolerance and factor of safety calculated while designing
- Utilized engineering knowledge to compute decisions throughout the design process of the car's powertrain

Projects

Skewb (Rubik's Cube Variant) Solving Robot github.com/robertvign/skewbot

- Devised a method to autonomously reach any cube state using only 4 motors
- Created a full cad in Solidworks including custom 3d-printed parts and imported standard parts

Paragon – Python Video Game github.com/robertvign/Paragon-ICS4U-summative

- Developed an educational story game using Pygame in Python, practicing object-oriented programming, organized file handling, and version control with GitHub to work coherently in a group setting
- Took initiative to demonstrate extensive independent problem solving and goal management capabilities

Arduino Binary Counter github.com/robertvign/arduino-binary-counter

- Engineered a looping counter with up and down buttons which displays a 4-digit binary sequence on LEDs
- Demonstrated quick learning skills and basic understanding of breadboarding and the arduino library

Skills

- **Tools:** SolidWorks, Onshape, AutoCAD, Git, SVN, Excel, Microsoft 365
- **Languages:** Python, SQL, C++, C, Java, HTML, CSS

Awards

- FIRST Robotics Provincial Finalists (Team award 2023, 2024)
- University of Waterloo President's Scholarship (90%+, $2000)