

# Matthew Gilbreath

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## EDUCATION

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**QUEENS UNIVERSITY**  
Bachelor of Applied Science

Kingston, ON  
Expected May 2026

**Major in Mechatronics & Robotics Engineering**

Cumulative GPA: 4.20/4.30; Dean's List 2022-Present

Relevant Coursework: Computer Architecture, Embedded Systems, Thermodynamics, Signals & Systems, Automatic Control, Electronics 1 & 2, Fluid Mechanics, Sensors & Actuators (for all see transcript)

- Completed project-based courses using microcontrollers and FPGAs, calibrated sensors and PID control algorithms
- Modelled electronics using LTspice, PSIM, digital logic using VHDL and Verilog, controls using MATLAB and Simulink

## UNIVERSITY PROJECTS

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### HYBRID ROCKET IGNITION SYSTEM

Feb 2024

- Led the design of an NO<sub>2</sub> & ABS hybrid rocket ignition system, reliably achieving 500°C in hot-fire tests
- Collaborated with safety teams to develop and execute testing procedures, documenting results for analysis and iteration

### COURSE BASED DESIGN PROJECTS

Jan – Apr 2023

- Used Arduino, Raspberry Pi, ROS, 2D-LiDar, and Serial Communication to remotely control and monitor a mobile robot
- Designed, modelled, and simulated a regenerative braking system using PSIM and SolidWorks for an energy-efficient vehicle

## WORK EXPERIENCE

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**QUEENS UNIVERSITY – First-Year Eng Design Course**  
Teaching Assistant Project Manager (Paid)

Kingston, ON  
Sept 2024 – Present

- Led the management of 4 student teams, overseeing project progression and providing guidance and technical assistance for CAD using SolidWorks, coding Arduino microcontrollers, and developing basic mechanical systems
- Organize weekly meetings by creating clear agendas, help to assign team roles, and ensure steady project progress

### DUNDAS VALLEY RESTURANT

Hamilton, ON

Line Cook & Gig-Developer  
3 Summer Seasons 2022 – 2024

- Managed prep work, inventory tracking, and coordinated large banquet events under high-pressure conditions
- Developed a Notion-based recipe database, incorporating ingredient costs and cross-linked entries for scalable use
- Made the database mobile-accessible, allowing staff to quickly retrieve and scale recipes during service.

### SPARQ STUDIOS MAKERSPACE

Kingston, ON  
Sept 2023 – Present

- Space Supervisor (Volunteer)
- Volunteer weekly, handling closing duties and performing maintenance on 3D printers and electronic equipment
  - Troubleshoot walk-in technical issues, assisting with 3D printing, soldering, woodworking, and coding for student projects

### LANDSCAPING, CANADIAN TIRE & NOFRILLS

Hamilton, ON  
Oct 2018 – Apr 2022

Laborer, Warehouse, and Customer Service

- Developed proficiency in manual labor, communicating a vision, and collaborating with a client prior to and during the job
- Used EDFs to manage stock, assist in placing inventory orders, and organize a warehouse layout to decrease search times
- Worked in retail, customer service, and warehouse operations

## SKILLS

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**Electrical & Software Skills:** Proficient in MATLAB, Simulink, Python, C, VHDL and Assembly for control systems and embedded development. Experienced with designing and implementing PID control systems, along with soldering and wiring for various electronic projects using microcontrollers and FPGAs.

**CAD Skills:** Skilled in SolidWorks for FEA analysis, topology optimization, and sheet metal design. Created detailed working drawings using GD&T principles for machining parts, and applied DFM principles. Used KiCad to design custom PCB boards.