# Kheireddine Ghettas

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## Summary of Strengths

- **Programming and Analysis:** Experienced in C, C++, Python, Java, HTML, CSS, and Lua.
- **Modelling and Design:** Proficient modelling using SolidWorks, Blender, and Clip Studio Paint
- **Embedded Systems:** Experienced with microcontrollers (Arduino, Raspberry Pi).
- **Collaboration and Communication:** Ability to explain technical concepts clearly to diverse
- audiences and promote cooperation to achieve project goals on time. Praised reports in academic settings.

## Education

2024 - 2025

### Bachelor of Applied Science, Computer Engineering, 1st Year
**Queen's University, Kingston, ON**

Pursuing a BEng. Education in performance in engineering design, computer engineering, software design, projects, and labs starting from Fall of 2024.

## Technical Experience

2024 - Present

### SW Team Member - Queens Knights Robotics Team (QKRT)
**Queen's University, Kingston, ON**

Gaining firsthand experience in software development and embedded systems of robots to compete in an annual international robotics competition (RoboMaster).

- Core team member improving robot's manual and autonomous navigation for a competition.
- Integrated software with hardware for precise omnidirectional movement using mecanum wheels.
- Performed kinematic calculations to convert joystick inputs into real-time motor commands.
- Applied robot-centric control algorithms to handle both translation and rotation.
- Optimized robot performance with intuitive, real-time control based on gamepad input.

## Projects

### Fox/Coyote Capture Simulation

2025

Queen's University, Kingston, ON

Developed a humane and data-driven wildlife capture strategy for Sandy Pines Wildlife Centre, replacing stressful netting methods with an automated simulation-based solution.

- Built an agent-based Python simulation (Mesa, NumPy, Pygame) modeling fox/coyote behavior for optimal trap placement.
- Designed a den-style safe shelter trap with food-hook, one-way gate, and remote trigger to minimize stress and ensure safety.
- Created an interactive GUI for staff to adjust variables and visualize heatmaps and trap zones.
- Evaluated system performance: passed backend/frontend tests, with 80% capture efficiency and 12.5/15 user rating.
- Ensured project met constraints: harsh climate operation (-30°C) and scalable prototype for $10,000 deployment, and fully compatible with existing infrastructure.