Automated trash sorter

- Machine learning
- Algorithms
- Data structures
- Accuracy

Facial Recognition & Payments

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Making a better WebAdvisor

- Shows students their opportunities
- Prereqs -> course plans
- UI design

RLS Scheduling (Inspo from Kay & Michael)

Residence Life Scheduling Generator

- Algorithms
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- UI design
- SQL and databases
- Data Structures (LL? Hash Table?)
    - Nodes
        - Name
        - Student ID
        - Email
        - Requested days off (3-5 days)
        - Constraints (ex. Evening classes)
        - Interpersonal conflicts
        - Same number of shift types
        - "Everyone has to work with everyone"
        - IHC Meetings (Tuesday 1st pack)
- Frameworks
    - Frontend: HTML, CSS, JS
        - React, Angular, Swift, Django?
    - Backend: C++, Python
    - Database Management: SQL
- Shift Allocation Algorithm (ChatGPT Generated):
    - Implement an algorithm to allocate shifts while considering each employee's preferences and constraints. Here's a simple algorithm outline:
        - Start with an empty schedule.
        - store shifts schedules and how many staff needed, different roles and their ranks
        - For each day:
            - Randomly select an employee who has not reached their maximum shifts.

- - Randomly select a shift type for that employee.
    - Check if the selected employee is available on that day and if the shift type is allowed.
    - If the conditions are met, assign the shift; otherwise, choose another employee and shift type.
    - Continue until the desired number of shifts per employee is reached.
  - Repeat this process until the schedule is complete.

When accommodating everyone's time off requests as a manager, it could be overwhelming to make sure that everyone has a fair amount of shifts as well as juggling a fair distribution of shifts with different magnitudes of difficulty. When the schedule is finally complete after too much time spent creating it, it's still riddled with human error and dissatisfaction from the employees because no one is perfect. We plan on cutting those dreadful hours of making a schedule by sorting through a database of employee information and time off requests, creating a schedule through our personally made algorithms, and outputting it through a user-friendly interface. This in turn, would assist in maximizing meaningful work by allocating the hours originally spent on creating a schedule, to now something more useful within their role.

As University of Guelph Students, we would love to be able to connect with others who are interested in creating innovative ideas. It would be a good opportunity to network and meet contestants form other schools and empower each other as we develop our skills. I want to be able to apply the skills I have learnt from coursework as well as external learning into a project that we are passionate about. I have also heard a lot of good reviews about QHacks from previous participants and I have personally participated in a previous MLH event which was amazing. I also grew up in Kingston so, this would be an amazing opportunity to go back to my hometown.