Eco-Bot Competition Proposal

**Objective:** For this competition, we will create a robot which can navigate an environment using on-board sensors. It will be able to collect garbage, differentiating between organic and inorganic material and storing them in separate containers.

**Time commitment:** The full group will meet in person once a week for 2-3 hours, and will participate in online meetings as needed. Group members will work alone or in small groups on the various sub-tasks.

|  |  |  |
| --- | --- | --- |
| **Project Timeline** | | |
| **September** | **October** | **November** |
| * Finish project proposal * Research and brainstorm ideas | * 3D model simulation * Electronic schematics * 1st prototype (chassis) * Decide upon organic-inorganic differentiation method | * Working mechanical prototype * Sensor testing with different materials |
| **December** | **January** | **February** |
| * Sensor implementation * System testing and improvement | * Systems finalization * Combine all systems into complete product * Integration testing | * Prepare for presentation * Troubleshooting and finalizing * Usability and user interface |

**Preliminary ideas for organic/inorganic differentiation**

1. Use machine learning to differentiate images of objects
2. Test object for conductivity
3. Test object for moisture

**Subsystems**

Mechanical - Chassis/Movement/Object Collection

Systems - Sensors/Sensor Control/Mechanical Control/Communication Network

Software - Object Differentiation/Decision Making

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Team Roster** | | | | | |
| **Name** | **Student ID** | **Phone #** | **Program** | **SFU Email** | **Subsystem** |
| Joanna Li (2nd year) | 301331960 | 2507314354 | MSE | liyuyul@sfu.ca | Mechanical |
| Muhammad Abid (2nd Year) | 301328836 | 6046036572 | MSE | abid@sfu.ca | Systems |
| Joshua Fritsch (2nd year) | 301349547 | 7783028118 | MSE | jfritsch@sfu.ca | Systems |
| Shawn Liu (2nd year) | 301329203 | 7787510012 | MSE | shawn\_liu\_3@sfu.ca | Mechanical |
| Benjamin Atbi (3rd year) | 301352143 | 7787141784 | SS | batbi@sfu.ca | Software |
| Tony Shen (1st year) | 301354678 | 7786819007 | MSE | tsa87@sfu.ca | Software |