EE / CprE / SE 4910 - sdmay26-07
Salt Spreading Autonomous Mobile Robot
Week 2 Report

09/24/2025 - 10/07/2025
Client: student-led
Faculty Advisor: Alexander Stoytchev

Team Members:

Isaac Blandin - Scheduling Lead, CAD Co-lead
Dylan Bunting - Electronics & QA Lead
Hoyt Dzwoniarski - Creative Design Lead
Thomas Huedepohl - CAD Co-lead
Mikhail McDade - Communications Lead
Shobhit Singh - Meeting Moderator, Secretary

*** Due to the current state of the project, this team report is written from a team perspective, as we have not had a chance for true individual contributions. We will follow the more traditional format in the coming weeks. — This applies again to this report, please contact us if you have any concerns with this or need clarification on the issue
*** Recently, our team has had to work with Dr. Fila and our faculty advisor to recharter under a new student-led project, so we have yet to make much, if any, technical progress. Planning to recoup a lot of time in the next two weeks.

Weekly Summary

Over the last two weeks, our team has worked through a very turbulent experience in which, due to various concerns, we had to terminate the ABC Computer replica project with our original client. This has involved a large amount of discussion between us, our client, our advisor, and instructors in order to officially end the original project, and we are now in the process of rechartering under a new student-led project.

Over the last week, we, as a team, have been able to brainstorm a new project idea and have garnered initial feedback and support for this project proposal from our advisor and Dr. Fila.

Past Week Accomplishments

- 09/25/2025 - Meeting with Instructors to Approve Recharter
    - Met with Dr. Fila to share concerns about our client and the original project we received.
    - We were given initial approval to recharter under a student-led project and given instructions to begin brainstorming a new idea.
- 09/29/2025 - Team Project Brainstorming Meeting

        - Met as a team to brainstorm a new project proposal.
        - Developed a list of team project ideas, including agricultural monitoring equipment, drones, and mobile robot applications.
        - Decided on a primary and secondary idea to propose to instructors/advisors
            - Our primary project prospect is an autonomous mobile robot that is designed to spread salt for ice prevention in the Winter.
            - Our secondary project idea was a field monitoring drone application
- 10/02/2025 - Meeting with Dr. Stoytchev to Discuss New Project
    - Presented the salt spreading robot concept to Dr. Stoytchev.
    - Worked with Dr. Stoytchev in further developing our proposed use-case
    - Discussed important requirements, decisions, and considerations for the project
        - Considered environmental constraints of our use case (snow, ice, cloud cover, etc)
        - Discussed scope/population
        - Discussed the depth and breadth we would like to see out of the project
    - Talked with Dr. Stoytchev about general long-term considerations such as prototyping, budgeting, and deliverables
    - Created initial research tasks
        - Market, technical, materials, etc.
- 10/06/2025 - Project Proposal Creation
    - Developed a project proposal to be reviewed by faculty advisor and then sent to instructors for final approval.

Pending Issues

- Still need to get final approval from instructors to move forward with this project
- We are currently behind on parts 1 and 2 of the design document due to our problematic first weeks of the semester.
- We are now behind by multiple weeks compared to other groups. We will need to lock in and play catch-up for the rest of the semester.

Time Tracking

Name	Hours This Week (Period)	Cumulative Hours
Isaac Blandin	7	13
Dylan Bunting	5	11
Hoyt Dzwoniarski	5	11
Thomas Huedepohl	5	11
Mikhail McDade	5	12
Shobhit Singh	6	12

Plans for the Upcoming Week

- Submit the final proposal to the instructors
    - Once reviewed by advisor (should be soon)
    - Was briefly discussed with Dr. Fila already, and was given an initial approval based on surface-level details
- Perform initial research tasks
    - Market research & prior art research
        - Research autonomous lawn mowers
        - Research roombas
        - Research other ice treatments other than salt
    - Technical research
        - GPS Tracking
        - IR / RF tag localization
        - Edge Detection, Path Following
        - Battery Capacity & Needs
        - Navigating a robot on snow
    - Design & Materials
        - Salt/Sand Dispensing Mechanisms
        - Tank Level Measurement
        - Component Sourcing
    - Look at salt spreading mechanisms at store
    - Divide amongst the team
- Create initial requirements
    - Develop user personas and use-cases
    - Develop constraints and safety considerations
    - Convert into tangible requirements
    - Research applicable standards
- Catch-up on missed assignments
    - Design Document Part 1: Introduction
    - Design Document Part 2: Requirements
- Meet with Faculty Advisor
    - Discuss next steps for the project.