

Milestone 4 – Mya Stenson

10 November 2025 / PROFESSOR CASSENS/ MART 391

Current Progress

This project started as a small idea about using technology to make gardening easier and more sustainable. It has since grown into a detailed concept that combines creativity and purpose. The AI-Powered Gardening Hub acts like a personal assistant that helps people understand and care for their gardens by analyzing soil health, sunlight, and weather patterns. I have completed my research plan, outlined the system's main features, and created early sketches that show how users could move through the interface.

My first milestone focused on how artificial intelligence could process environmental data to guide gardening decisions. The second milestone expanded that idea into a connected system that could work with sensors, solar panels, and automated updates through one central hub. My design presentation helped me establish a visual identity for the project using natural colors to create a calm, balanced feel. This approach made the project more grounded and realistic while showing how design can communicate both technology and empathy.

What's Going Well

The project feels increasingly tied to real-world sustainability goals. Each phase builds on the last, and the purpose remains clear: to use technology as a bridge between people and their environments. Two of my close friends are involved in local environmental organizations at the University of Montana, where they collect and sample ecological data. Their work gives me access to credible research and practical insights that I can adapt for this project.

I also plan to use institutional and public resources such as the Mansfield Library's Environmental Studies guides, the Montana Climate Office, the Natural Resource Information System, and the Montana Department of Environmental Quality. These databases offer soil, water, and air quality data that reflect Missoula's local environment. Integrating this information will make the prototype more accurate while reinforcing the connection between technology and place.

Challenges or Roadblocks

Right now, my biggest challenge involves balancing the design of human interaction with the technical logic behind the AI. Our recent class module on Generative AI versus Agentic AI really made me think about how artificial intelligence should function within this system. Should it wait for users to approve every action, or should it act independently based on real-time data? That question defines the project's direction. I am exploring how to merge these two approaches by giving users control at first, while gradually allowing the system to operate on its own as it learns.

Designing this flow in Figma is also complex. I am planning how to show data moving from sensors into AI analysis and then into real actions, such as watering adjustments or soil nutrient changes. I want the interface to remain simple, even as the system handles more

behind-the-scenes decisions. It is a balance between showing transparency and building trust so that users feel confident letting the system act for them.

Next Steps

The next phase focuses on building a small beta launch hosted on a secure local server, mirrored through GitHub for easy updates. The prototype will be an HTML-based interface where users can create a profile, input their location, and connect sensors that track soil, air, and water conditions. The system will analyze the data, compare it with local weather trends, and create adaptive care plans. These plans may include adjusting watering schedules, modifying nutrient timing, or offering layout suggestions to improve efficiency.

While the first version will allow users to fine-tune their own settings, the long-term goal is a fully autonomous system. I want people to feel confident that their gardens are cared for without needing to second-guess whether to water or fertilize. When the AI can respond instantly to soil or weather changes, it encourages more people to participate in sustainable practices. The hub will promote the idea that growing food and caring for plants can be easy, reliable, and rewarding, even for beginners.

The beta will feature two control modes. Assistive Mode will let users review and approve each suggestion. Agentic Mode will allow the system to act automatically within safe limits that users define. This approach builds on what we discussed in class about how AI can shift between assisting and acting on its own. Over time, I plan for the system to become more autonomous by learning from user interactions and environmental feedback.

Testing will include a small group of participants, including my Environmental Science peers who already collect local data. They can help evaluate the AI's logic and accuracy by comparing outputs with real Missoula conditions. The beta will use sample or publicly available data for safety and privacy. All data will be processed locally during testing, and the system will record its actions to show why each adjustment was made.

As development continues, I will document every decision, data source, and ethical consideration. This documentation will support future scaling and transparency. The final goal is to create a reliable, self-regulating system that makes sustainability easier to practice every day. By reducing uncertainty and helping people succeed at gardening, the AI-Powered Gardening Hub could inspire a larger shift toward environmental awareness and sustainable living—one garden at a time.