`EE/CprE/SE 491 WEEKLY REPORT 02

-2/17/26-2/24/26

Group number: sddec26-03

Project title: Squirrely Bird Feeders - Using AI to outsmart the Squirrels

Client &/Advisor: Randall Geiger

Team Members:

- Wyatt Sinclair
- Jack Morrison
- Miles Nichols
- Kenny Tran
- Benjamin Bartels
- Nolan Hoenert

- **Weekly Summary:** This week we met with our advisor and looked in more depth into the details of our design. Additionally, we met in a call and worked on a doc that planned out all of our available options. We worked on our class presentation and moved toward coming to a conclusion about things such as if our product is attachable onto a feeder or if it comes as a feeder.

- **Past week's accomplishments**
  - Jack Morrison: Continued the spreadsheet that lays out many potential hardware products that we can use to implement parts of the project.
  - Wyatt Sinclair: Researched how to implement an electronic mechanical gate. Looked into AI detecting systems and motion detection systems
  - Nolan Hoenert: Researched the different types of bird feeders, such as the tube feeders, house feeders, tray feeders, suet feeders, and window feeders.
  - Benjamin Bartels: Researched ways to deter squirrels and different bird feeder gate designs.
  - Kenny Tran: Created design sets and reviewed with Ben, Miles, and Jack. Polls have been created for group voting on approach to each problem. Narrowing down options. (tabled AI research because Wyatt was interested in it)
  - Miles Nichols: Continued research on squirrel deterrence. Completed the introduction for the design document, specifically looking into the types of users our product is catered to.
- **Pending issues:**

Wyatt Sinclair: N/A

Jack Morrison: N/A

Nolan Hoenert: N/A

Miles Nichols: N/A

Kenny Tran: N/A

Benjamin Bartels: N/A

- **Individual contributions:**

NAME	**Individual Contributions** *(Quick list of contributions. This should be short.)*	**Hours this week**	**HOURS cumulative**
Jack Morrison	Continued building hardware components spreadsheet	6	12
Miles Nichols	Continued research for squirrel proofing the feeder and worked on the introduction for the design document-> highlighting product users. Worked on the presentation and the design choice with the group.	6	12
Wyatt Sinclair	Researched feeder designs, mechanical gates, and set up an AI training environment (YOLO, PyTorch, GPU). Began dataset integration for bird vs squirrel detection	6	12
Nolan Hoenert	Researched different bird feeder styles	6	12
Kenny Tran	Compilation of approach to understand constraints for first prototype	6	12
Ben Bartels	Researched different ways to deter squirrels	6	6

- **Comments and extended discussion**

[Squirrely Bird Feeder Design Sets - Google Docs]

- **Plans for the upcoming week** *(Please describe duties for the upcoming week for each member. What is(are) the task(s)? Who will contribute to it? Be as concise as possible.)*

• Wyatt Sinclair: Finalize bird feeder design choice and deterrent method with team. Complete dataset integration (bird + squirrel) and begin initial YOLO model training. Prepare to present an AI system approach to the advisor.

• Jack Morrison: Work together to continue formalizing our design goals and decisions as well as continuing hardware research.

• Miles Nichols: Work with the team to come to conclusions on methods of stopping the

squirrels and where to run the detection algorithm. Look more in depth into the specific tech stack after decisions are made on our design.

• Nolan Hoenert: Continue researching bird feeders, and discuss with the group and advisor on their vision for the bird feeder, and discuss what options are out there.

• Kenny Tran: Break down our approach after vote in Discord ends into smaller sections so future work can be focused on a specific problem.

• Benjamin Bartels: Discussing with the group about different mechanical bird feeder gate designs and how we want to go about deterring the squirrels from getting to the bird feed.

○ **Summary of weekly advisor meeting***:* Started the meeting by reviewing progress from last week and narrowing down our deterrence approach. After discussing options, including a gate, low-frequency sounds, and a deterrent spray, the team aligned on a mechanical gate as the most practical and reliable solution to block squirrel access. We also made a key technical decision: the system will likely use a Raspberry Pi as the onboard microcontroller, which will communicate with an external application to handle AI-based squirrel detection. This keeps processing off-device, making the system more flexible and scalable. We continued refining our understanding of the product's users and revisited additional features from last week, including bird photography, motion detection, and the companion app. This meeting helped solidify our core architecture and gave the team a clearer path forward as we move into the prototyping phase.