EE/CprE/SE 491 WEEKLY REPORT 7

4/6/26-4/13/26

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, the team advanced their project infrastructure by researching cloud solutions, updating the design document, assembling the initial Raspberry Pi components, and setting up the team website. During the advisor meeting, it was decided to gather image recognition training data by hosting the Pi at the advisor's location, using corn to safely attract local birds and squirrels. The team is currently waiting for the remaining hardware parts to arrive and working to resolve networking challenges regarding camera-to-compute connectivity on the university network. Upcoming plans include prototyping the cloud backend, finalizing design options, updating the birdfeeder's 3D model, and reaching out to ecology experts with specific questions.

- **Past week's accomplishments**
  - Jack Morrison: Gathered details on solutions for our cloud infrastructure, worked on a document outlining the details. Worked on beginning to implement some of the details locally.
  - Wyatt Sinclair: Worked on the design document and worked on the team's website.
  - Nolan Hoenert: Worked on the design document, specifically the gantt chart, making a rough project plan/ timeline, so everybody has an idea of how long we have, and how

when parts of the project need to be finished.

- Benjamin Bartels: Got the Raspberry Pi parts in, we put some of the raspberry pi together. Worked on the 3D model, and looked for bird/squirrel feed.
- Kenny Tran: Spent time looking for faculty to ask for advice in wildlife ecology and doing preliminary research to not embarrass the group by asking silly questions.
- Miles Nichols: Set up the project repository and website.

- **Pending issues:**

Wyatt Sinclair: N/A

Jack Morrison: N/A

Nolan Hoenert: N/A

Miles Nichols: N/A

Kenny Tran: Audubon Society Contact.

Benjamin Bartels: N/A

Everyone: Waiting for the rest of the parts to arrive

- **Individual contributions:**

NAME	**Individual Contributions** *(Quick list of contributions. This should be short.)*	**Hours this week**	**HOURS cumulative**
Jack Morrison	Worked on a cloud services document outlining deeper technical implementation details.	6	38
Miles Nichols	Made a repo for the GitLab project. Connected to local and pushed readme. Updated the team website to have profiles, design doc, and weekly reports.	5	41
Wyatt Sinclair	Worked on the team website and design documents.	4	35
Nolan Hoenert	Started block diagram iterations	6	34
Kenny Tran	Looked for graduate students and faculty in wildlife and ecology for advice.	6	40
Ben Bartels	Researched birdfeed that squirrels prefer. And worked on updating the 3D model of	6	41

	the birdfeeder for the camera mount.		

- **Comments and extended discussion**

[Squirrely Bird Feeder Design Sets - Google Docs]
[Cloud Tech Stack]

- **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.)*

  • Jack Morrison: Work on prototyping the cloud backend, as well as asking ETG about GPU availability in the virtual machine environment.

  • Miles Nichols: work on Design Document Part 4: Design to finalize design options.

  • Kenny Tran: Make contact with the Audubon Society for questions about birds/ecology, as well as reach out to ISU wildlife/ecology department.

  • Benjamin Bartels: Continue to update the birdfeeder 3D model and make a mount for the camera to be placed in the future. Research birdfeeds for local species and which kind local squirrels tend to favor, and place an order request for some birdfeed.
  Wyatt Sinclair - Make a detailed list of how the software runs and its functionalities, along with how it connects to other parts of the project.

  • Nolan Hoenert: Look into the server options that ETG provides, look into whether to use wifi/bt and how to handle sending the data from the pi to the server.

- **Summary of weekly advisor meeting***:*

During the April 6th advisor meeting, the team reviewed their hardware progress, noting that half the parts have arrived and the first prototype will be 3D-printed once the new filament arrives, utilizing the oversized servo mount for the time being. To gather test data for the image recognition model which must be trained to identify head-on and side profiles of animals, Geiger offered to host the Raspberry Pi, and the team will use corn rather than harmful rice to safely attract squirrels and common feeder birds like sparrows and goldfinches. Additionally, the team needs to resolve networking challenges regarding camera-to-compute connectivity, noting that using an ETG Virtual Machine would restrict access to the ISU network. Finally, before reaching out to experts at the national Audubon Society or ISU faculty for help with training data and wildlife behavior, the team plans to prepare a targeted list of highly specific,

non-Googleable questions.