

CS 160 Software Engineering Sec 4

Professor Dominic Abucejo

TrashTalker: Sprint 2 Report

Green Team (Team 4)

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Introduction

Waste classification is one of the most essential mechanisms needed to encourage recycling and minimize negative environmental impact caused by improper handling of hazardous waste. Despite being waste producers, most people often fail to classify their own waste before throwing them into the trash, due to difficulty differentiating types of waste or lack of incentive to comply with waste management rules. In order to help remove this barrier to effective waste management, TrashTalker is a web app designed to help users quickly classify the waste they produce by leveraging image detection technology. Our goal is for our application to encourage users to be more conscious about where their trash ends up and to help guide users to the proper disposal methods for the waste they produce.

Statistics

~How many scrum meetings occurred during sprint 2:

During Sprint 2, we had 3 meetings that lasted between 15 to 20 minutes.

~Shortest task duration time and longest task duration time:

The shortest task was expanding the classification system by adding more categories of waste and creating landing pages for each type. This task took around an hour.

The longest task was implementing the image detection technology, YOLOv8, which took a day to complete.

~Completion Rate:

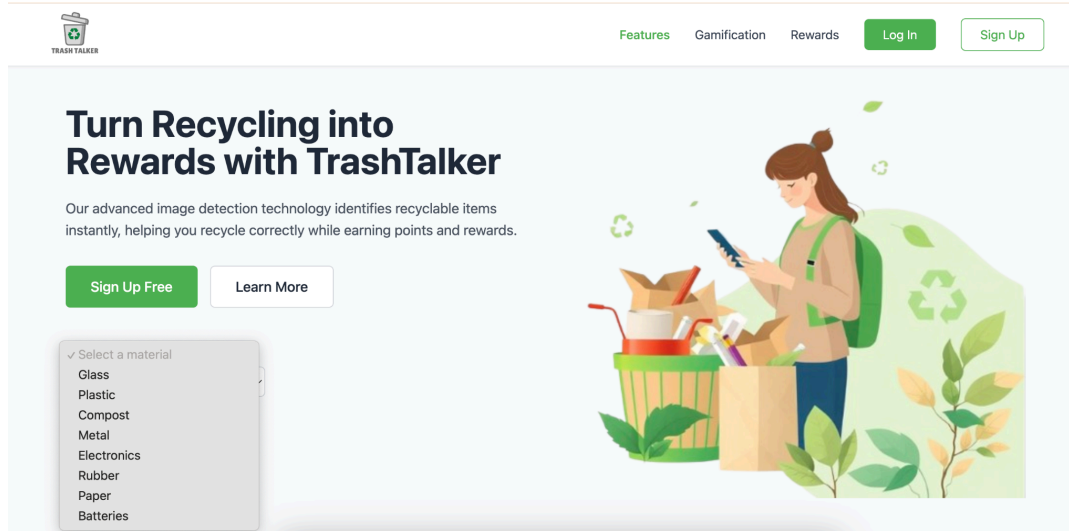
During this sprint, we were able to complete 95% of the tasks that were on the backlog on time, except the full implementation of the image detection model as we faced some setbacks trying to integrate it into our project on Github.

~Team Velocity:

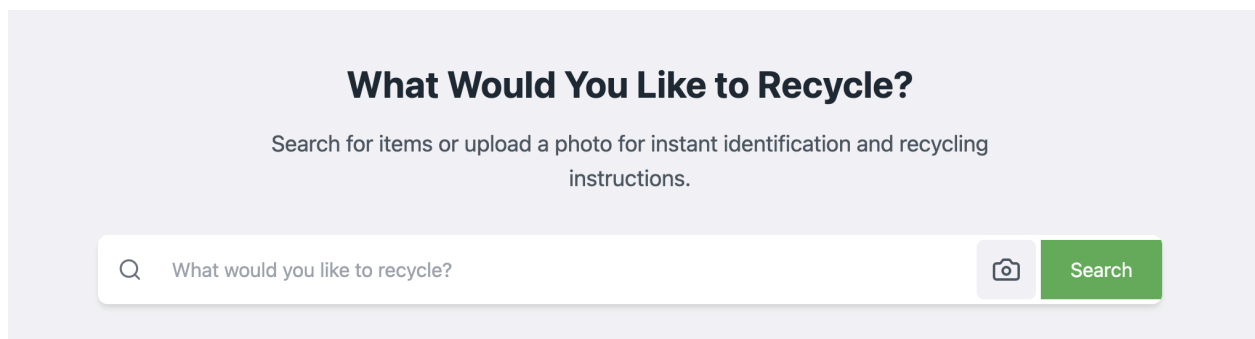
There were 8 items on the backlog, which were worth 22 story points. We were able to complete them in 2 weeks.

Functionality

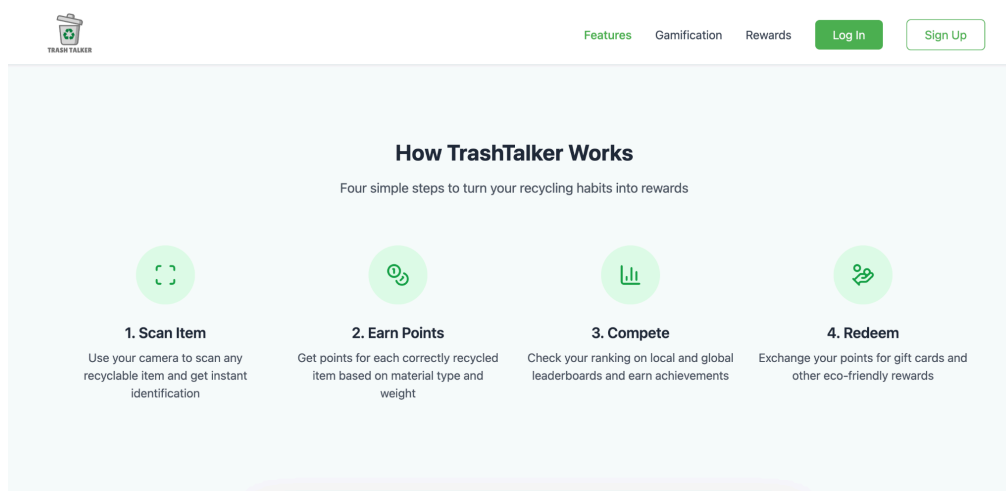
The functionality that was added during sprint two is divided into frontend and backend categories. For the front end, the UI was overhauled to include more information about the application (goals, how it works, etc.) as well as an expanded category list to classify waste into Metal, Rubber, Paper, Batteries and Electronics. Users can also upload an image from their device or use the search bar to find out more information about waste classification and disposal. A scoreboard was also created, which will allow users to view the rankings of themselves and others with information that includes the users name, score, and location (city or general region).



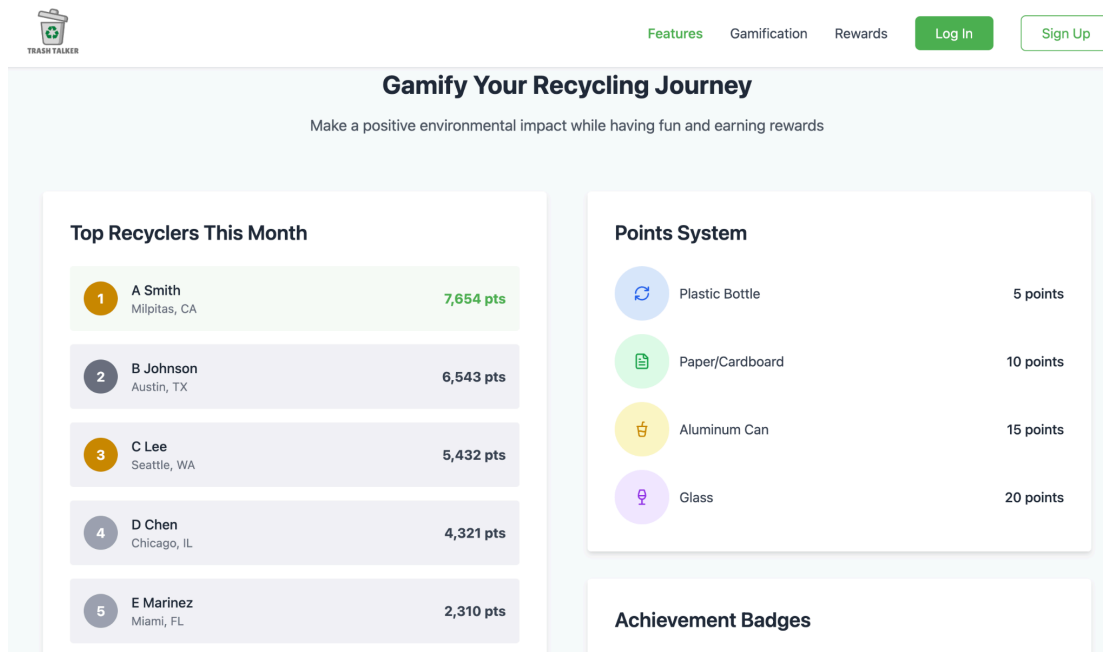
(Above screenshot shows expanded category list.)



(Above screenshot shows the search bar where users can query or upload an image.)

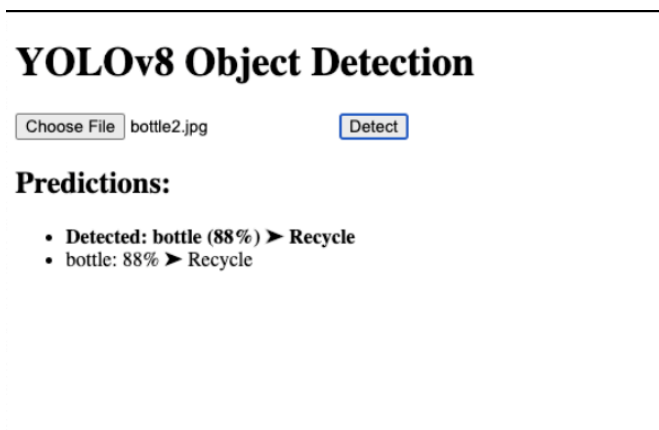


(Above screenshot shows upgraded User Interface that helps onboard users.)

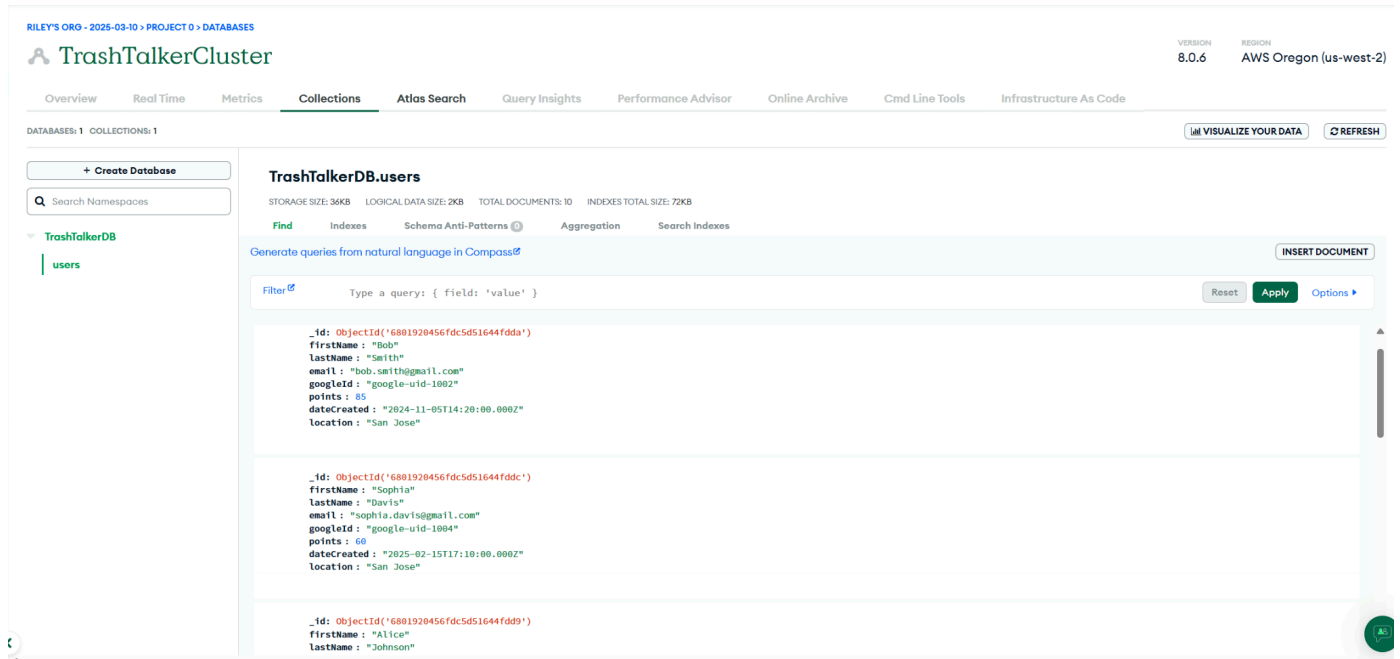


(Above screenshot shows a scoreboard that helps users track their achievements.)

An early stage image detection model was also developed using the YOLOv8 computer vision model. This model can successfully take images of items (waste items) and provide the name of the item classification. This model is not yet integrated into the application, but it is functional and undergoing further testing.



(Above image shows the image detection model in its early stage of development)



(The above screenshot shows our MongoDB cluster with user schema and test data)

An additional backend element that has been developed during sprint two is related to the database. As of the end of sprint two, a schema for application users has been developed and the database has been filled with test user data. The application also now has database API's that allow fetching, updating, and adding users and their data. The database has also been integrated with our applications Firebase Google authentication. Upon a user's login with Google, their information will automatically be parsed and sent to our MongoDB database to store them as a new user. Specifically, their first and last name as well as their email address will be stored, and their score/points will be initialized to zero.

Assessment of Sprint 2

Sprint 2 of our project went relatively well. Despite Spring Break and midterms, getting in our way, we were still able to complete the items on the backlog on time. Our team has now gotten more comfortable working together and are able to fill in for each other in times of need. We have also started an internal note taking system so that members who are unable to attend meetings are able to catch up by reading the notes. During the second sprint, we started working on the main feature of our application which is the image detection model. We faced some challenges trying to integrate this model into our Github project as the file size was too big. Hence, we could not include this in our demo presentation. We also spent some time reconsidering how to structure our rewards system and waste verification process, as we realized that our initial plan made our app vulnerable to being abused by some users.

In the next sprint, we will be seeking to improve our team's focus and maximize productivity on the final tasks for the project. Since this is the final sprint, our team needs to maintain its velocity in order to wrap up the project and to ensure the successful completion of our planned deliverables. We can achieve this by maintaining our strong team communication (both digital and in person) and ensuring that we avoid last minute scope creep by engaging in clear discussions of any proposed changes or additions to the application. In this final sprint we should ensure that our focus stays on integrating the final components of the application, polishing up the UI, and testing features.