## Part 1: User Stories

- As a birdwatcher, I want to receive notifications about the bird species visiting my feeder, so that I can learn more about local wildlife and enhance my bird watching experience.
- As a birdwatcher, I want to receive alerts when the feeder needs to be refilled or maintained, so that I can ensure a constant supply of food for the birds.
- As a data enthusiast, I want to analyze trends in bird visits over time, so that I can understand seasonal patterns and behaviors of different bird species.
- As an avid gardener, I want to understand the feeding habits of local birds, so that I can plant flowers that attract them and enhance my garden.
- As a researcher, I want to access detailed reports on bird species and their visit patterns, so that I can contribute to studies on local wildlife.

Design D0: High-Level View

Title: Smart Bird Feeder

Goal Statement: To create a smart bird feeder that utilizes computer vision to capture and analyze bird data in real-time.
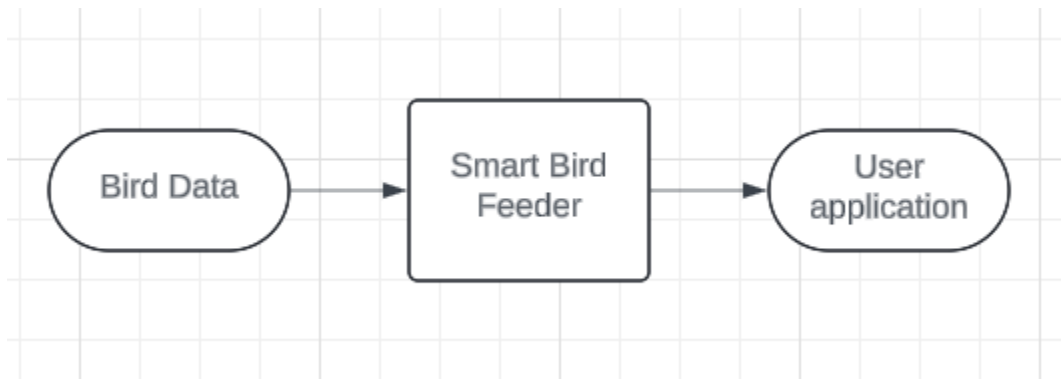
Explanation: This diagram shows a very high level overview of the process, the device takes in data and outputs the correct bird.

Design D1: Module Breakdown

Title: Smart Bird Feeder

Goal Statement: To create a smart bird feeder that utilizes computer vision to capture and analyze bird data in real-time.
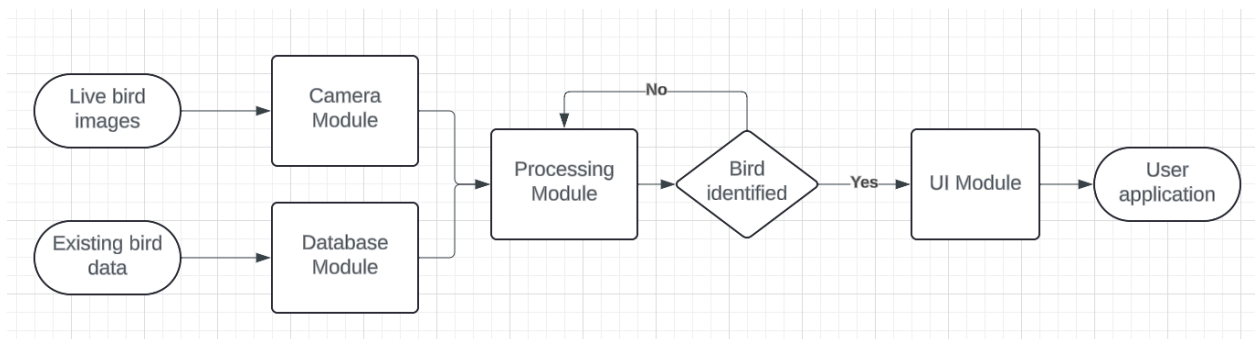

Explanation: This diagram shows a deeper view on how the birds are identified. The camera will capture images and then the device will process them. The processed data is then compared to existing bird data stored in a database. If the bird is correct the user moves on to the application where info is displayed. If it is wrong, the program will check again and try to re identify the bird

Design D2: Detailed System Overview

Title: Smart Bird Feeder

Goal Statement: To create a smart bird feeder that utilizes computer vision to capture and analyze bird data in real-time.
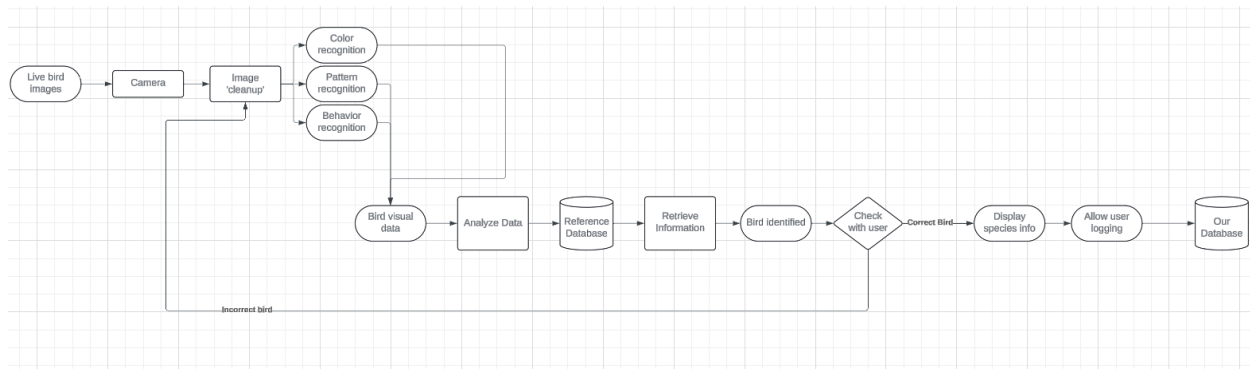
Explanation:

This is an even more detailed overview of the overall project workflow. It starts with the camera taking a picture of the bird. The image is then taken through a cleanup process where blur and other artifacts are filtered out to make the processing easier. Once the image is ready, it is fed into a code script where it will be broken down into its color, pattern, and behavior. After the data is ready, it gets analyzed and compared to a reference database that contains exact information on existing bird species. This data is compared to each entry in the database and when it finds a match, the code will retrieve the information of that bird species to output to the user. The user will then verify if that is the correct bird species. If not, the process will loop back to the image cleanup and reanalyze. This loop will continue until the user verifies that it is the correct bird. Once the bird is verified to be correct, the information of the bird that visited will be saved and stored into a database.