Measurement of Backyard Items from Any Photo

Overview
Purchasing items remotely can often be inefficient if measurements are made incorrectly. The average consumer is likely to make mistakes or take inaccurate measurements. We are to build software that will take images captured by the consumer, and generate 3D models of the object so accurate measurements can be taken.

Objectives
Our objectives were to create a consumer friendly application for capturing images, convert 2D images to 3D models, and capture accurate measurements from these models. We divided the responsibilities into three categories: iOS development, Android development, and web development.

Approach
The team took a few approaches to solve the problem:
● We gathered customer needs and requirements from the sponsor by asking them the goals of the application and clarifying the problem we needed to solve.
● We researched many different photogrammetry techniques through patent searches and online documentation, then narrowed the possibilities by determining what resources we had access to.
● We constructed simple prototypes for the various approaches to determine viability.
● We tested for the most feasible approaches to decide on the approach we would take.
● We validated our models and results by measuring known references such as rulers.
● We generated 3D models of the objects we captured images of and analyzed the quality of the models as well as the accuracy of scale.
● We also created applications (Android, IPhone, Web) that would interact with the final workflow to make the process smoother and easier for the consumer and for Highwood.

Outcomes
The project had the following outcomes:
● The project gives Highwood an even bigger footprint in the tech industry and enables them to push forward an augmented reality solution for their customers.
● The project will reduce costs of sending employees to measure backyard items for the customer.
● The project introduced a new and unique way of measuring objects that simplifies the process for both the consumers and Highwood.