Dwight Look College of
ENGINEERING
TEXAS A&M UNIVERSITY

# Team 29: Shoe AR
Bi-Weekly Update 1
Santiago Cantu, Alvaro Espinoza, Ulises Aguilera, Brandon Smith
**Sponsor: Pranav Dhulipala**
TA: Eric Robles

Executive Summary

- **Problem Statement:** Shopping for shoes online lacks the in-store benefits of trying on a shoe to ensure the correct size and viewing how the shoe looks on your feet.

- **Solution Proposal:** Create a shoe AR application that measures the size of your foot, provides you the correct shoe size regardless of brand, and allows you to see how the shoe would look on your foot with augmented reality.
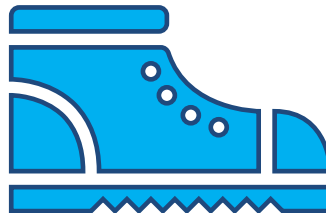
System Block Diagram
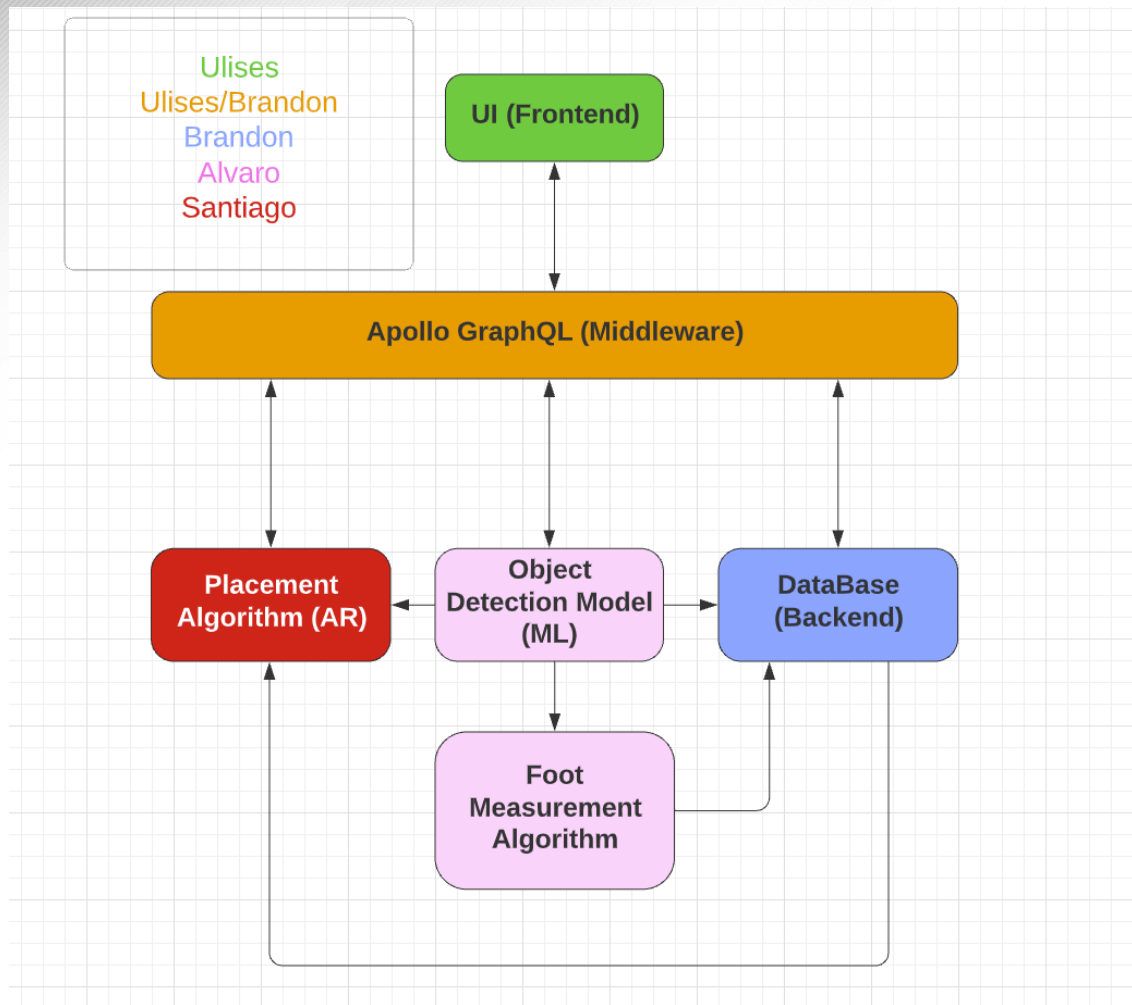
UI:
- Storefront
- Camera

Apollo:
- Information transfer

Database:
- Shoe models

Placement Algorithm:
- Superimposition

Object Detection:
- Foot Detection

Measurement Algorithm:
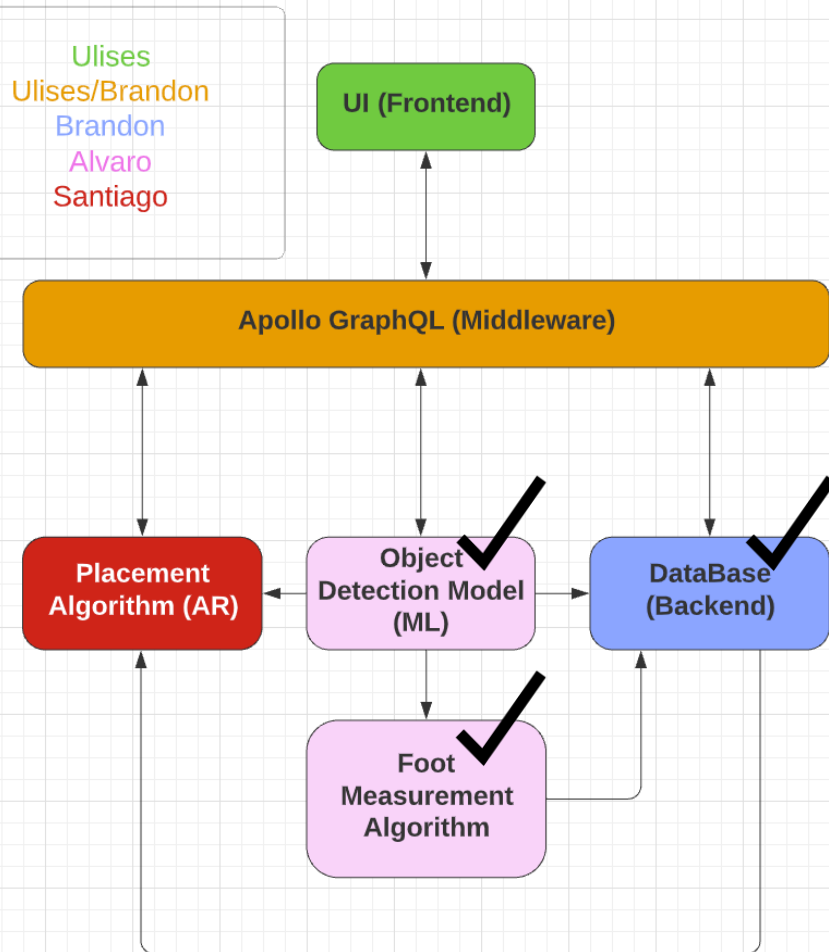- Foot size

Major Project Changes

Superimposition Subsystem

- Veer away from Udemy, Python OpenCV, and Snapchat Lens towards Android (Kotlin)
- Limit to one plane of perspective rather than a 360⁰ view

Frontend Subsystem

- Possible app restructure

Project Timeline

Finished:
- Data Base
- Object Detection
- Measurement Algorithm

In Progress:
- UI
- Placement Algorithm
- Apollo Integration

Shoe Superimposition

Santiago Cantu

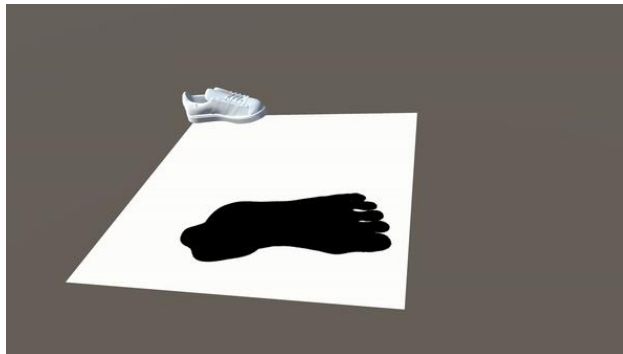| Accomplishments since 403 8 hrs	Ongoing progress/problems and plans until the next presentation
• 403 files were kept and currently run properly on Udemy, OpenCV Python, and Snapchat Lens • Covered Android Studios App development tutorial	• Develop basic AR Android Studios Kotlin App

Shoe Superimposition

Santiago Cantu

Snapchat Lens

Python OpenCV

.obj
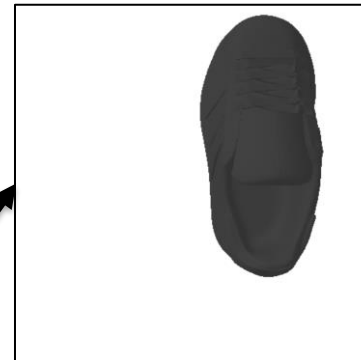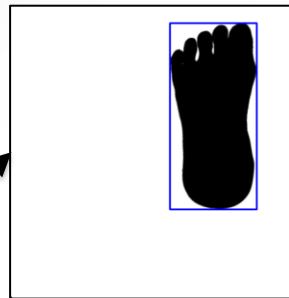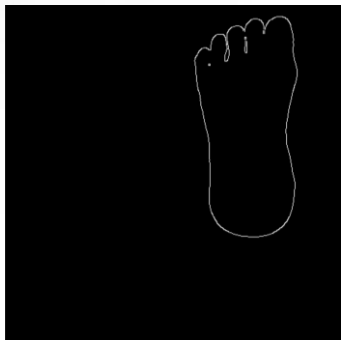
Unity

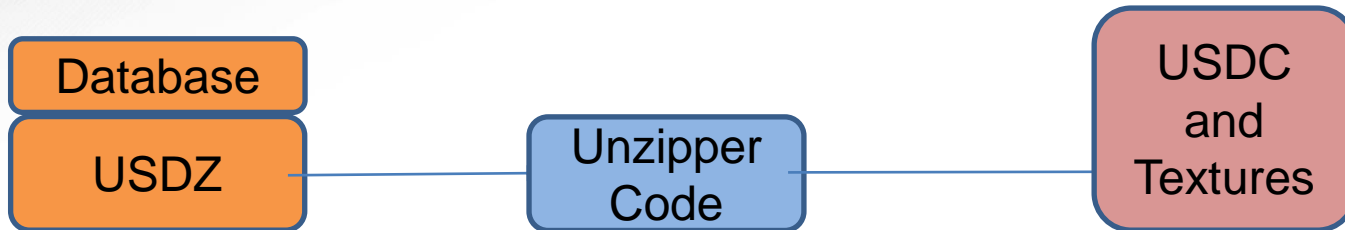# Database/Backend

Brandon Smith

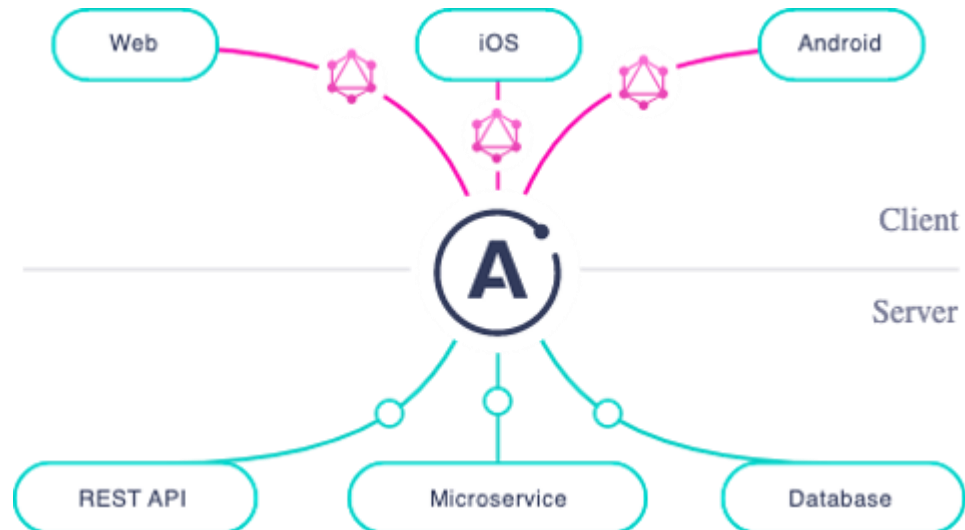| Accomplishments since 403 8 hrs	Ongoing progress/problems and plans until the next presentation
• 403 files were kept and currently database is stored locally • Watched tutorials on integrating SQLite database with Apollo	• Integrate SQLite database with our Apollo server • Convert unzipping script from python to kotlin

Database/Backend

Brandon Smith

Detection Model

Alvaro Espinoza

Accomplishments since 403 6 hrs	Ongoing progress/problems and plans until the next presentation
• Generated training images of foot side profile to improve accuracy of measurements • Researched TFLite conversion • Watched tutorials on integrating TFLite model in Kotlin	• Convert current model to TFLite • Integrate current TFLite model in current app build • Research connecting TFLite model to Apollo

Detection Model

Alvaro Espinoza

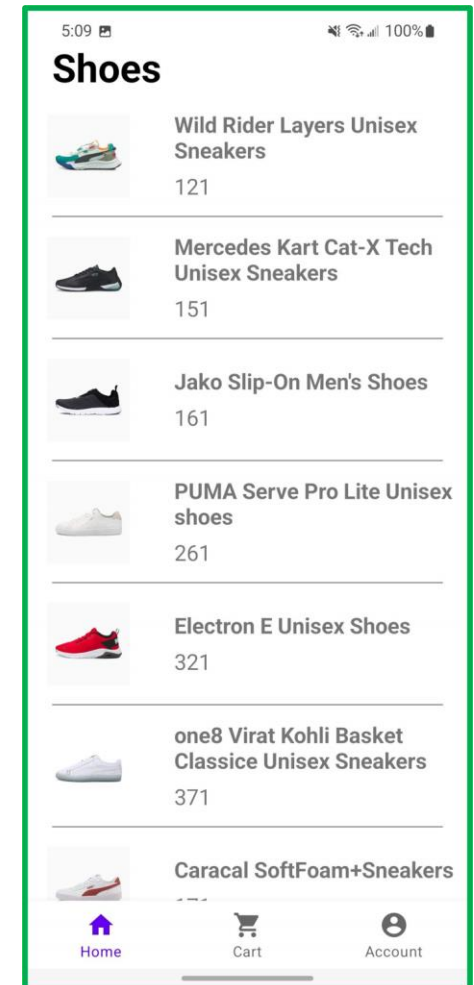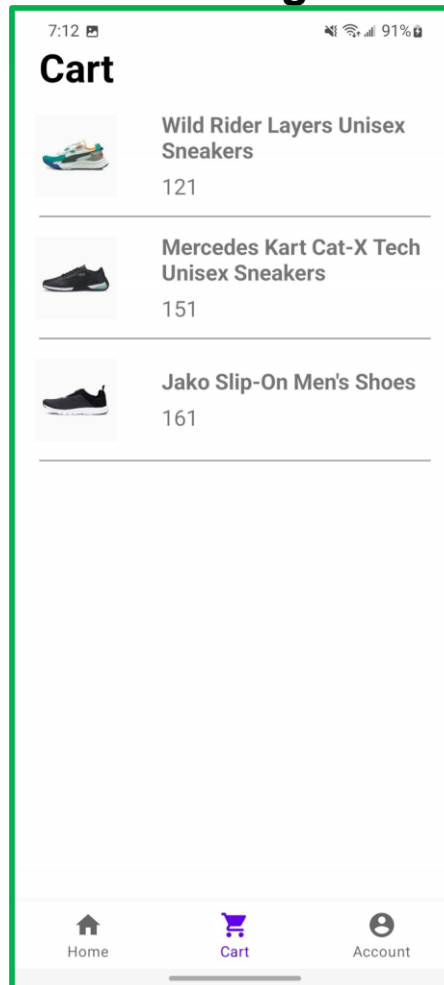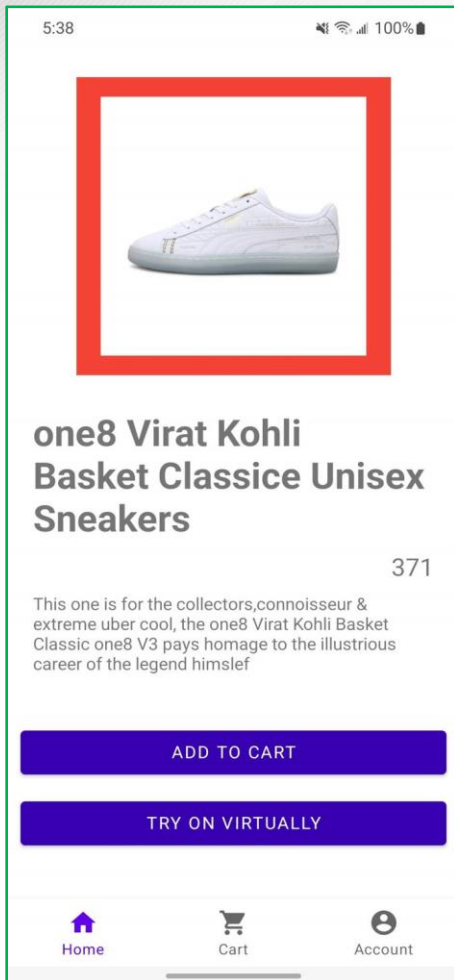# Frontend

Ulises Aguilera

Accomplishments since 403 4hrs	Ongoing progress/problems and plans until the next presentation
• Fixed some bugs • Started dark/light mode auto switching	• Plan what requirements the other subsystems need to implement into app • AR Camera

Frontend

Ulises Aguilera

Execution & Validation Plan

TASK NAME	FEATURE TYPE	RESPONSIBLE	VALIDATION	START	FINISH	DURATION (DAYS)	STATUS
Project planning and 1st Update	Planning	All	Complete introductory update presentation	8/28/2022	9/7/2022	10	Complete
Sprint 1				9/7/22	9/21/22	14	In Progress
Final touches on frontend	Frontend	Ulises	Get rid of known bugs from last semester	9/7/22	9/21/22	14	In Progress
Develop Kotlin unzip script and move database to Apollo server	Backend	Brandon	Demo script on an emulator and test out Apollo query	9/7/22	9/21/22	14	In Progress
Convert TF model to TFLite	Machine Learning	Alvaro	Test TFLite model in Kotlin and Apollo	9/7/22	9/21/22	14	In Progress
	Superimposition	Santiago		9/7/22	9/21/22	14	In Progress
Update Presentation 2	Presentation	All		9/7/22	9/21/22	14	In Progress
Sprint 2				9/21/22	10/5/22	14	In Progress
AR camera with Santiago	Frontend/Middleware	Ulises	Working AR in app	9/21/22	10/5/22	14	In Progress
Backend: Gather Display Pictures	Backend/Middleware	Brandon	Test pictures on UI	9/21/22	10/5/22	14	In Progress
Improve Size Detection Algorithm Accuracy	Machine Learning	Alvaro	Increase variety of training data	9/21/22	10/5/22	14	In Progress
Create Android AR app demo and begin integrating to frontend	Superimposition	Santiago	Successful AndroidAR capabilities	9/21/22	10/5/22	14	In Progress
Update Presentation 3	Presentation	All		9/21/22	10/5/22	14	In Progress

Execution & Validation Plan

Sprint 3				10/5/22	10/19/22	14	In Progress
Database and ML implementation	Frontend/Middle ware	Ulises	Working connection to DB and Alvaro's script	10/5/22	10/19/22	14	In Progress
Backend: Integrate database with Apollo in UI	Backend/Middle ware	Brandon	Test UI's ability to pull models from database	10/5/22	10/19/22	14	In Progress
Finish integrating TFLite model in Kotlin/Apollo	Machine Learning	Alvaro	App is able to detect feet and size	10/5/22	10/19/22	14	In Progress
Integrate with backend and foot detection	Superimposition	Santiago	Prove ability to pull models from backend and work with foot detection	10/5/22	10/19/22	14	In Progress
Update Presentation 4	Presentation	All		10/5/22	10/19/22	14	In Progress
Sprint 4				10/19/22	11/2/22	23	In Progress
Finalize	Frontend	Ulises	Finalize the app	10/19/22	11/2/22	23	In Progress
Finalize	Object measurement	Alvaro	App is able to detect feet and size	10/19/22	11/2/22	23	In Progress
Finalize	Superimposition	Santiago	Test ability to superimpose several shoe models	10/19/22	11/2/22	19	In Progress
Update Presentation 5	Presentation	All		10/19/22	11/2/22	14	In Progress