



Knight Foundation
School of Computing
and Information Sciences

School of Computing & Information Sciences

Spring 2023 Senior Design Project

SkillCourt Interactive Soccer Technology



Students: Mark Gonzalez

Mentor: Joseph Quinn, Mentor, and Gunmundur Oxndal, Product Owner

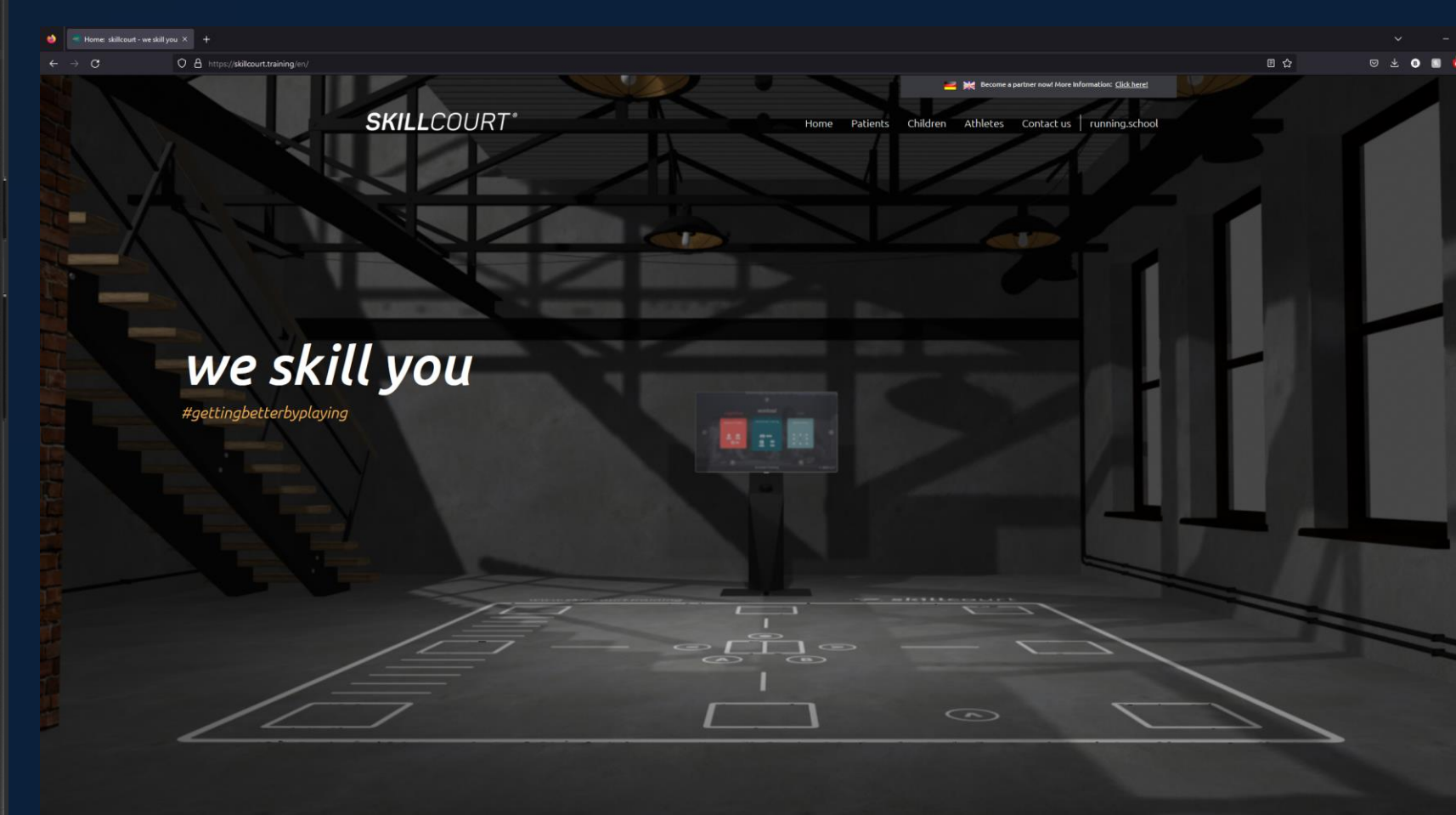
Instructor/Faculty: Dr. Masoud Sadjadi, Florida International University

PROBLEM

SkillCourt aims to improve a footballer's athleticism, reaction timing, and technical skill using LED panels as targets and a mobile application as a controller. Our team helped develop the application and a website for relaying information about SkillCourt. Many of the technologies were outdated and no longer in a working state, leaving both the mobile application and website builds unable to compile.

The current application and website each have a working build with missing functionalities. As of now, the website database and application database are not connected, and several functionalities of the application are missing.

CURRENT SYSTEM



REQUIREMENTS

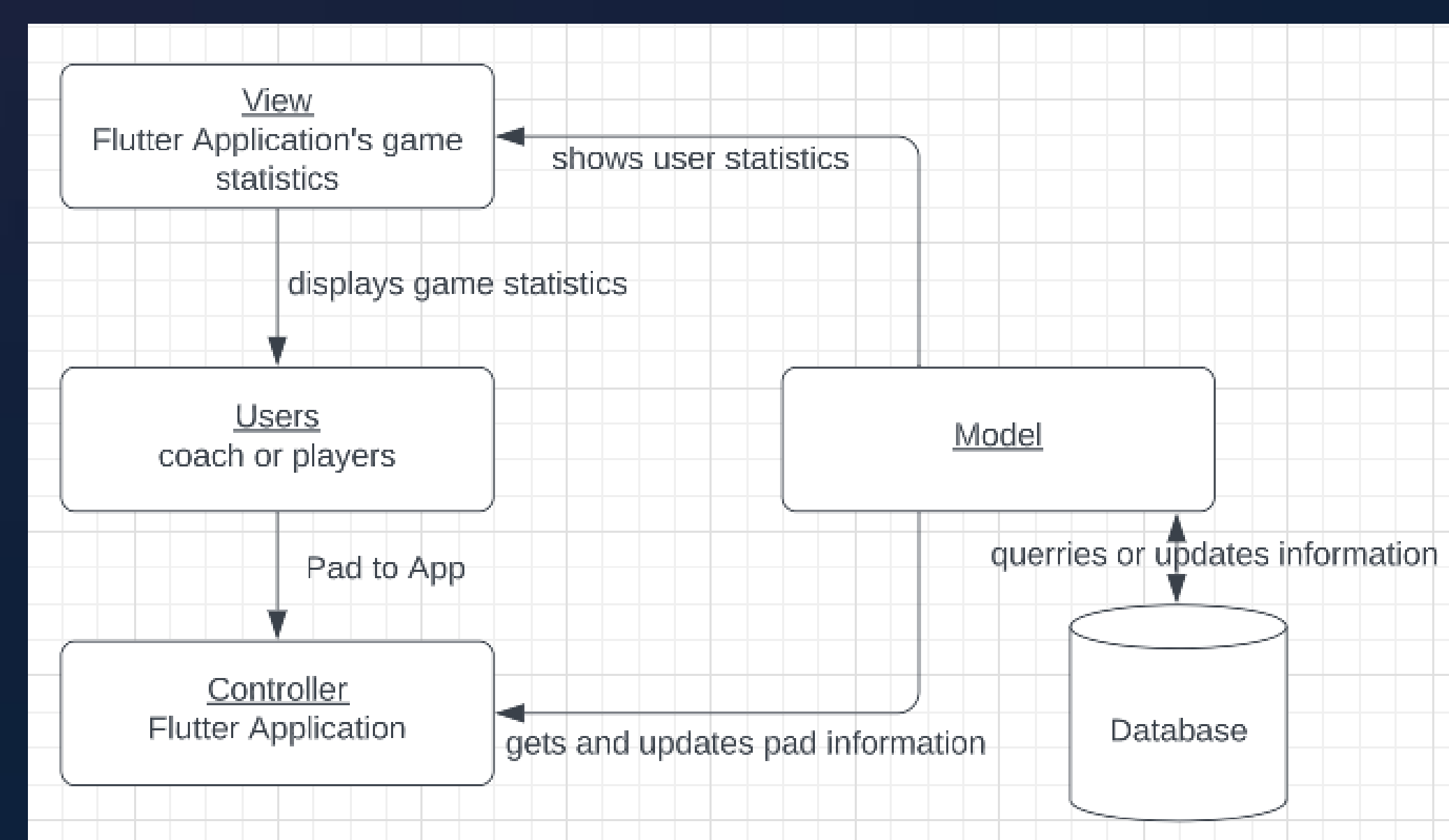
Application

- Java JRE > 1.8
- Git
- Git-flow-avh
- Flutter SDK
- Android Studios or Xcode with a phone emulator
- Python3 (Optional)

Website

- Node >= v19.0.0
- Npm >= 9.3.1
- PNPM >=v6.21.0 or a V.M. with Linux installed
- Docker Desktop with PostgreSQL
- Vim (optional)
- VSCode (optional)

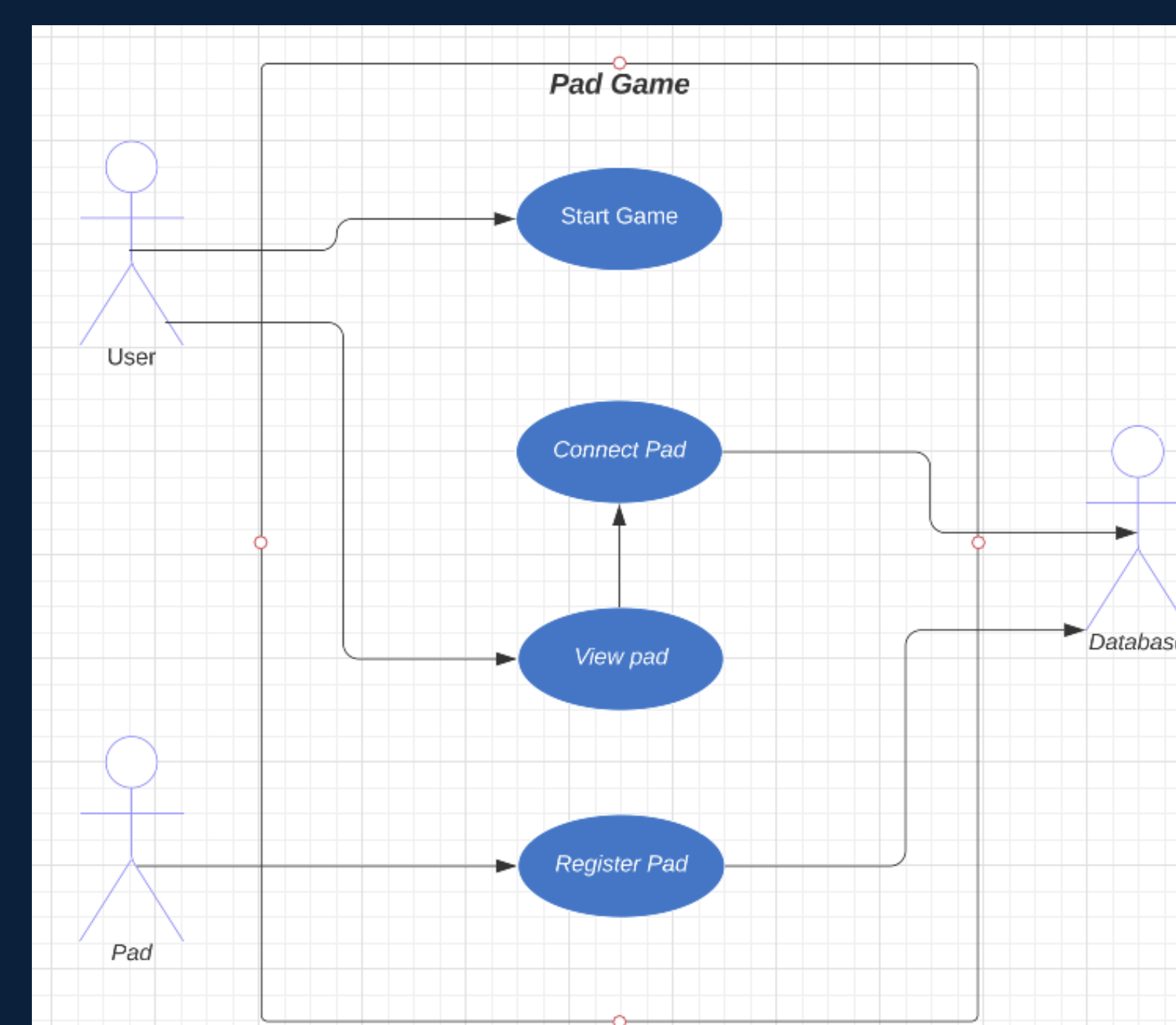
SYSTEM DESIGN



- **Controller:** the master key that controls the entire application for the user or users
- **Model:** with the pad connected, updates and stores the statistics while the game is running.
- **View:** For when flutter needs to show in-game statistics

The current system for the mobile application is designed around Flutter to achieve a universal experience between Android and iOS. The website is built using reactJS and Docker desktop.

USE CASE DIAGRAM



- **User:** Accesses the game through the application, inputs data through scoring and playing the game
- **Pad:** Collects data from game, stores in database (e.g. player statistics).

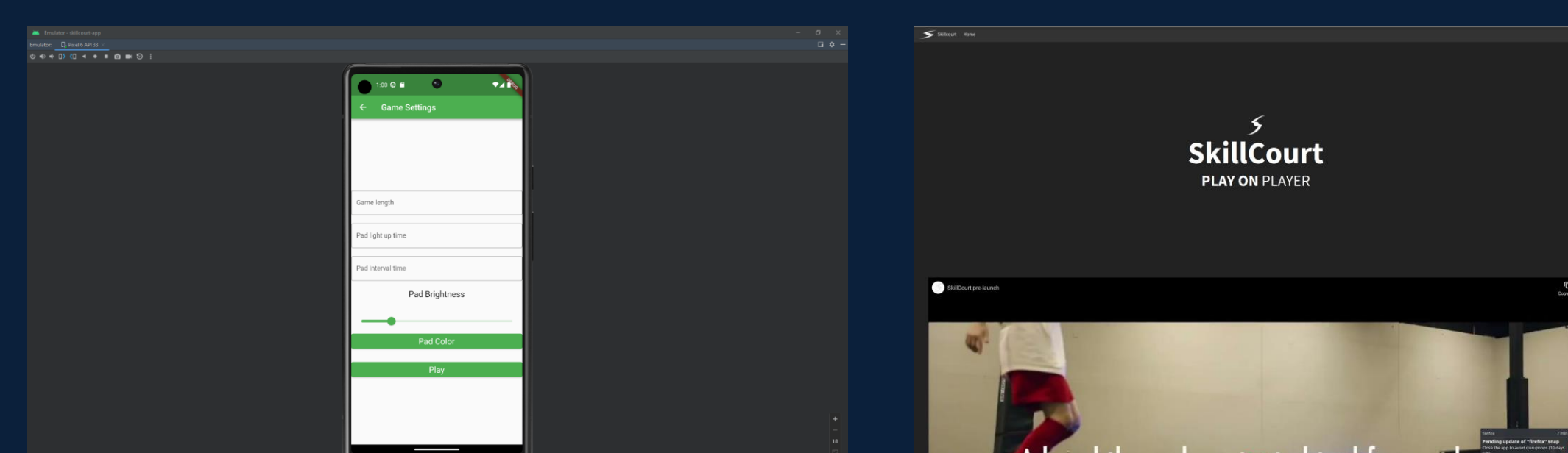
IMPLEMENTATION

The application is designed for both iOS and Android phones and to transfer data, so Flutter was used as the foundation. Python was used to generate scripts for the pads and LEDs Docker Desktop is used for the database and website.



VERIFICATION

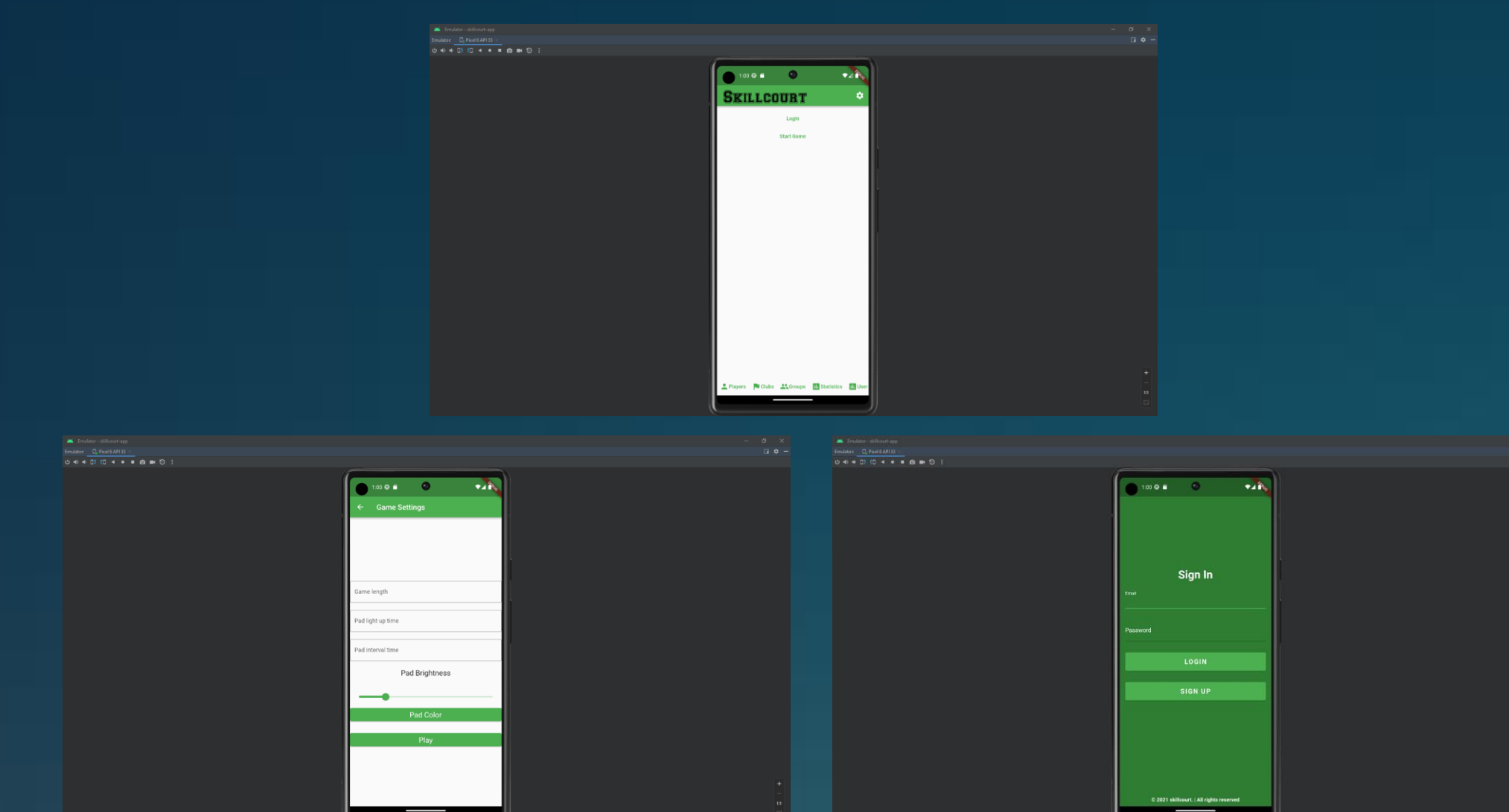
We were successful in migrating and updating the website and application builds to work on modern technologies.



SUMMARY

My contribution to the project was working on the mobile application development. Many of the technologies used by the previous build were outdated, such as project SDKs, packages, and deprecated methods in the project code. Most of the development time was spent researching Flutter to identify how to update each part of the project that was not working. The current build now works and compiles with updated Dart code, flutter packages, and SDKs. Additionally, we were able to implement multiple new features, though they are currently only placeholders in the UI with no functionalities implemented.

SCREENSHOTS



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ACKNOWLEDGEMENT

The material presented in this poster is based upon the work supported by Gunmundur Oxndal and Joseph Quinn. I thank them both for their assistance and mentorship that I/we received throughout the senior design project.

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