

AUGMENTED REALITY APP

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INTRODUCTION

AR Virtual Pet App



- AR - Technology that superimposes onto the real-world environment
- Integrate AR features into react native
- Users interact with pet in different ways

Camera

- Enable user to view model within their environment

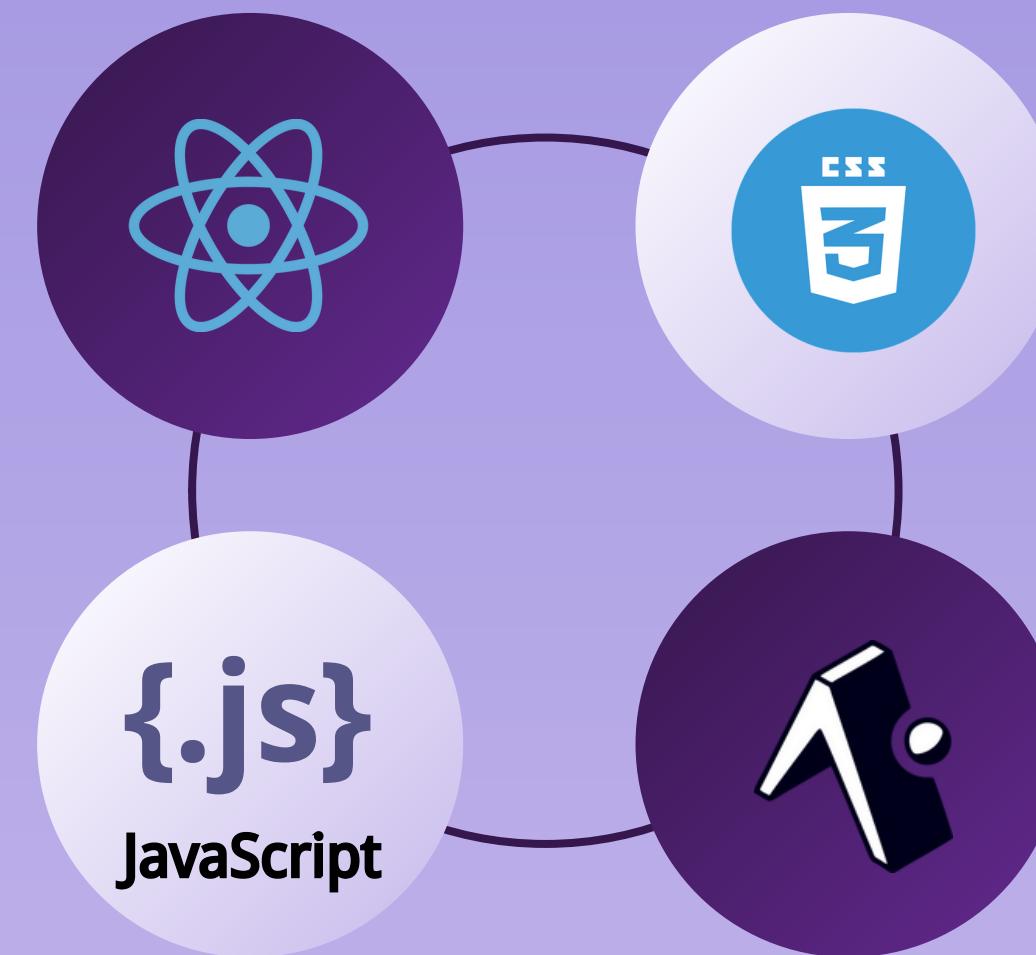
TECHNOLOGIES

REACT NATIVE

cross-platform
framework

JAVASCRIPT

written in JavaScript
—rendered with
native code



HTML & CSS

makes writing styles
easier

EXPO GO

provides developer tooling
that makes developing apps
easier, like file-based routing,
a standard library of native
modules, etc.

IMPLEMENTATION

REACT-THREE-FIBER

- React-three-fiber is a React renderer for three.js
- Scenes are declarative, reusable, self-contained components
- Eases integration and managing complex 3D scenes

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```
import React from 'react';
import { Canvas } from 'react-three-fiber';
import { Box } from '@react-three/drei';

function App() {
  return (
    <Canvas>
      <ambientLight />
      <pointLight position={[10, 10, 10]} />
      <Box position={[-1.2, 0, 0]} />
    </Canvas>
  );
}

export default App;
```

Example code of scene rendering within React-Three-Fiber

3D MODEL RENDERING



METRO.CONFIG. JS

Required
configuration for
running GLB files



IMPORT GLB FILES

A binary file
format for sharing
3D data



REACT-THREE- DREI

A helper library
that loads GLB
models



PARTICLE SYSTEM

Simulate particle
effects through
Three.js

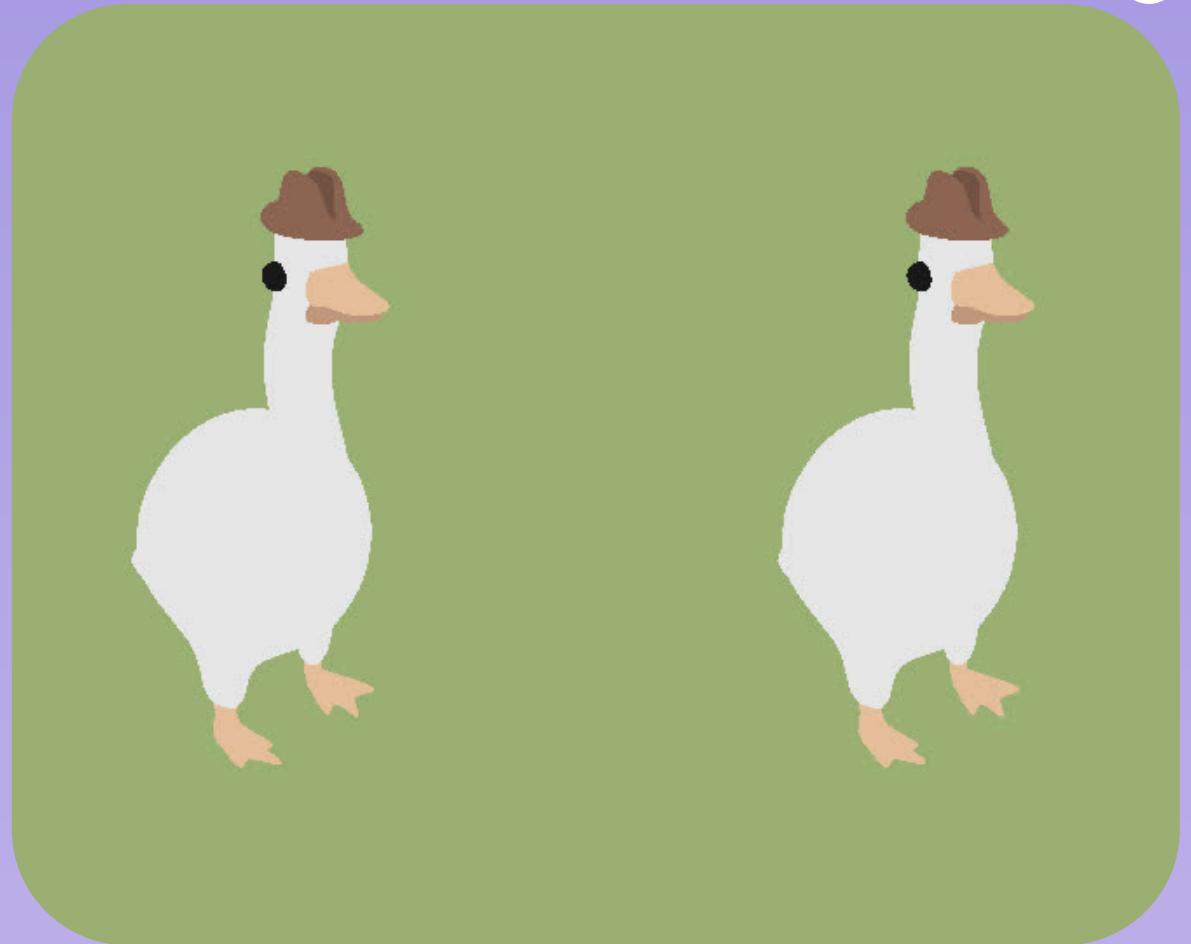
SCALING AND ROTATION

CustomSlider Component

- An interface for scale, rotations, and brightness
- Min, Max based on slider type

DisplayModel Component

- Accesses the values from the sliders
- Transformations and ambient light on change with useEffect()

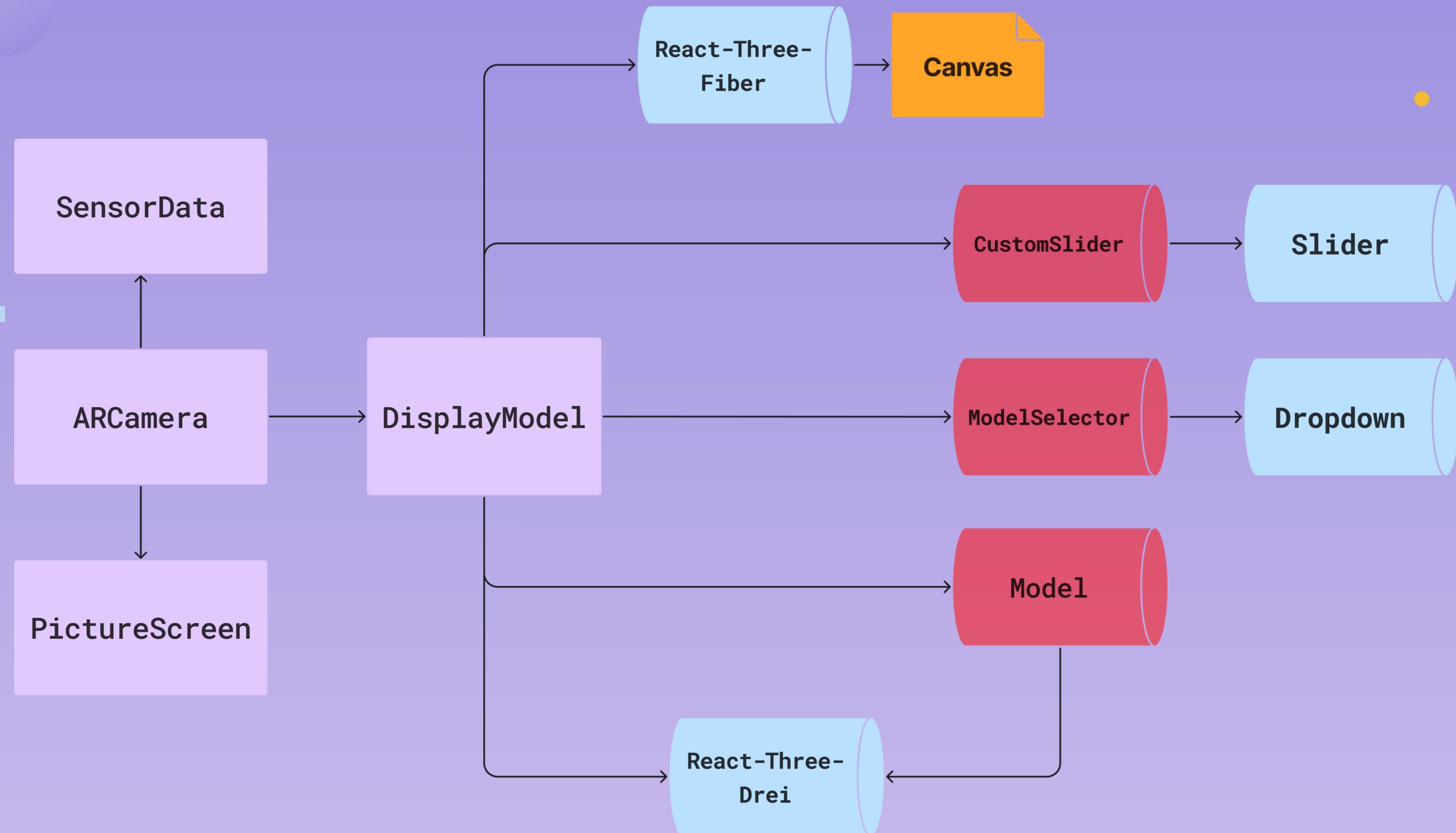


INTEGRATING THE CAMERA

- Access permissions from the user
- Implement focus on tap
- Render the DisplayModel component
- Gyroscope data (x, y, z)



SOFTWARE DESIGN



CHALLENGES



EXPO

Expo Go's built-in AR support is no longer supported



CONFLICTS

Limitations when trying to integrate certain third-party libraries



FILE SIZE

The GLB loader cannot render large GLB files, results in missing textures

DEMO!

Select Model



Feed

Play

Particles

Scale

12.95

Rotate X

114.39

Rotate Y

-95.70

Rotate Z

0.00

CONCLUSION

Future Changes

- Research other frameworks that better support AR functionalities
 - Unity with AR Foundation
 - Vuforia
- Eject from Expo
- Improve user interactions



THANKS!

QUESTIONS?