



NASA Models

Baglan Aitu, Mohamed
Hussein, Sebastian Cajas,
Talha Bilal



01

★ Overview

Proposed project

★ 02

Tool

Software tools

03

★ Application

Our implementation

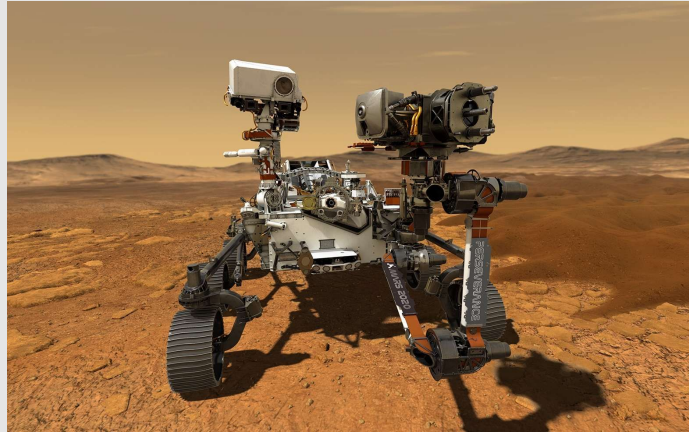
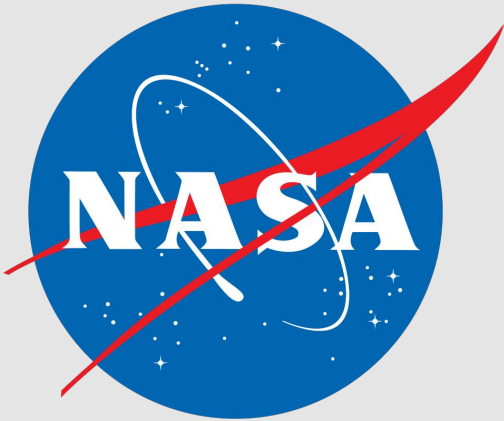
★ 04

Demo

Our app demo

★ The objective of the project:

★
Developing educational application for
visualizing and controlling NASA rovers



Tools:



The background is a dark blue space-themed illustration. In the top left, there is a white line-art satellite with a central body and two rectangular solar panel arrays. To its right is a small white circle. In the top right, there is a white circle with two short horizontal lines inside. On the right side, a white comet with a five-pointed star head and a long, curved tail is shown. Below the comet is another white circle with two short horizontal lines inside. In the bottom right corner, there is a small white four-pointed star. In the bottom left, there is a small white five-pointed star. A large, light gray, irregular blob shape is centered on the slide, containing the text.

Application

NASA Models displays and controls
multiple rovers on a fixed plane space
using your phone

“.usdz” models (<https://mars.nasa.gov>)

Development Timeline:



1

Phase 1

Prototype 1: plane
detection and perlin
Noise landscape

2

Phase 2

Prototype 2: Rover
model with unity

3

Phase 3

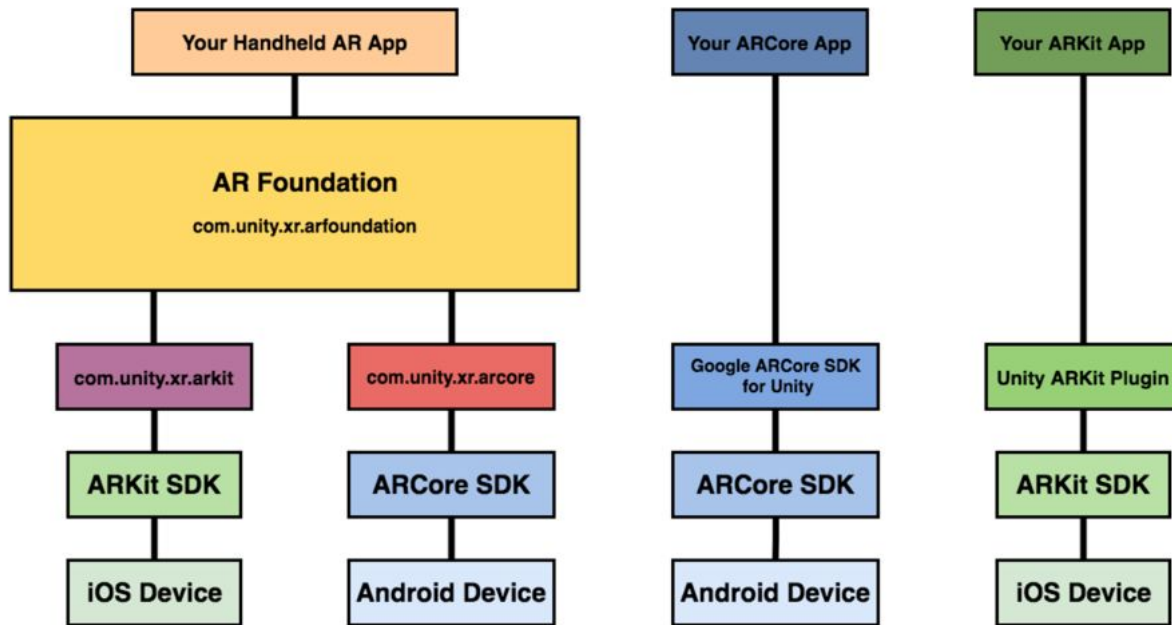
Prototype 3: Swift
implementation of
plane detection

4

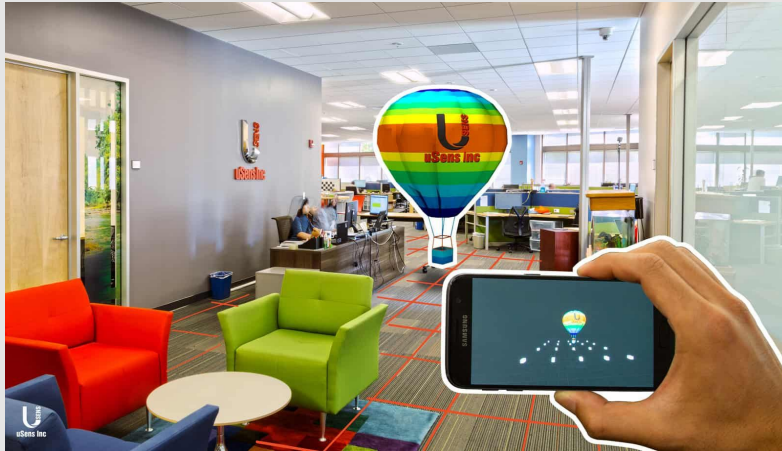
Phase 4

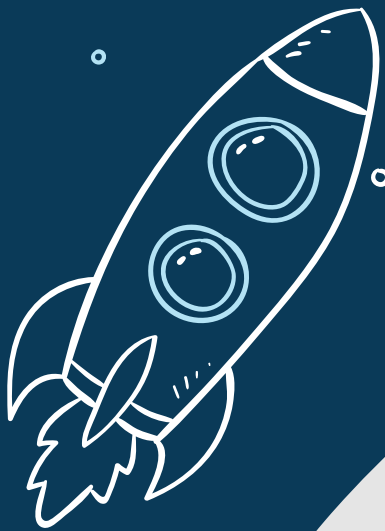
Prototype 3: Swift implementation
of plane detection and scrolling
menu with models

Unity + ARFoundation



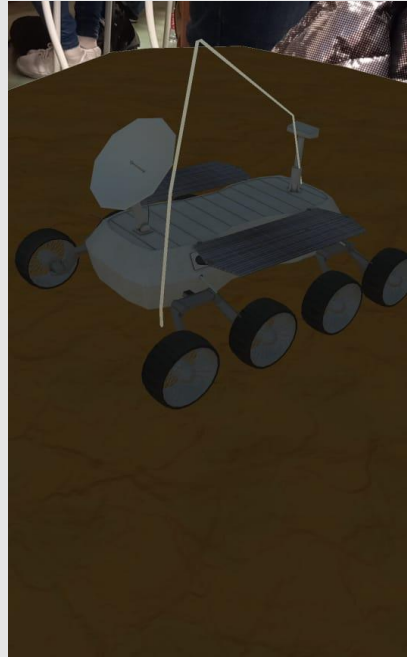
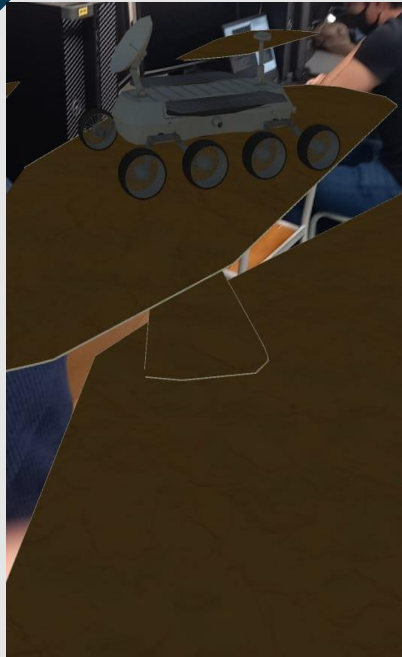
SLAM: simultaneous localization and mapping





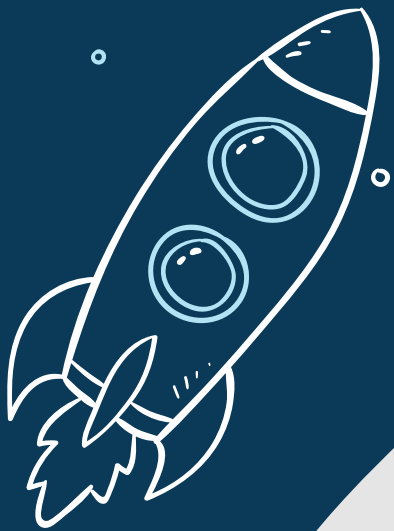
First Model

Surface detection + Rover visualization





Second Model



01.

Icon app



NASA Models



Lander

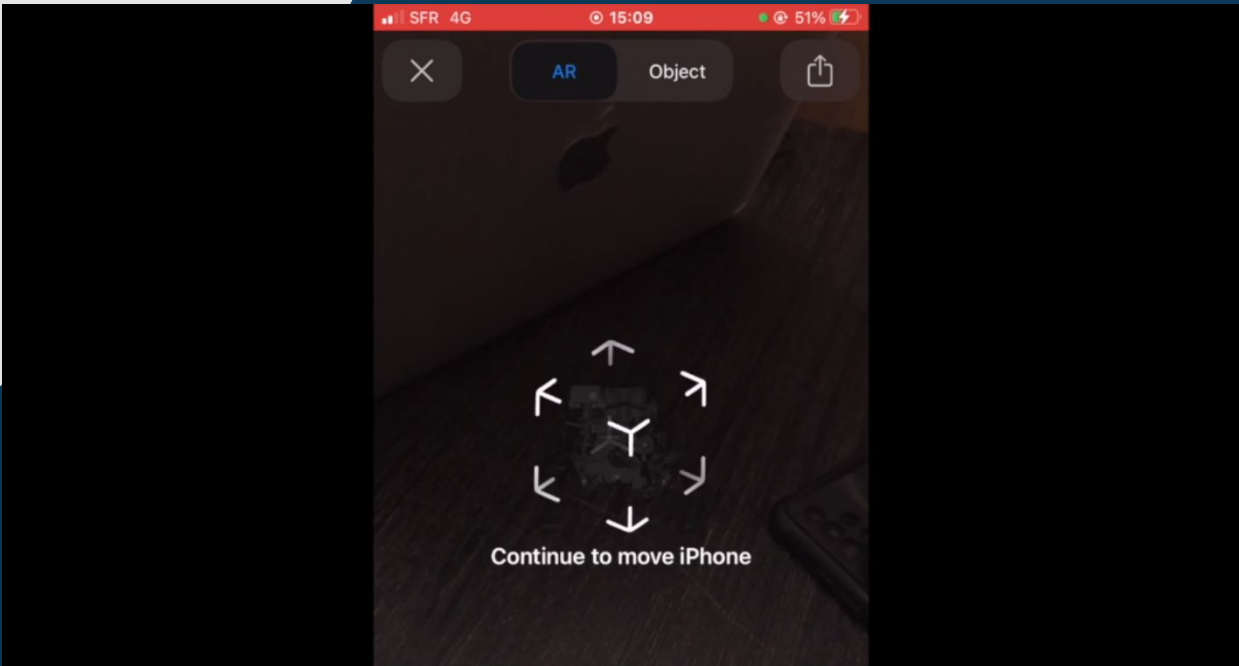


Models

App has variety of models to run and test

Rover



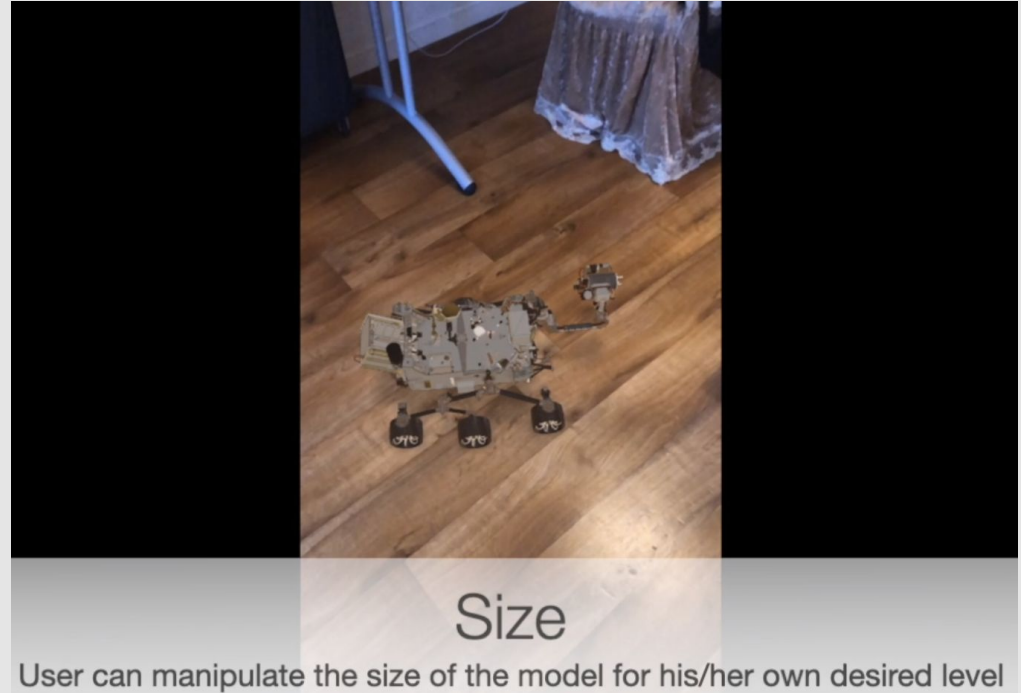


Calibration

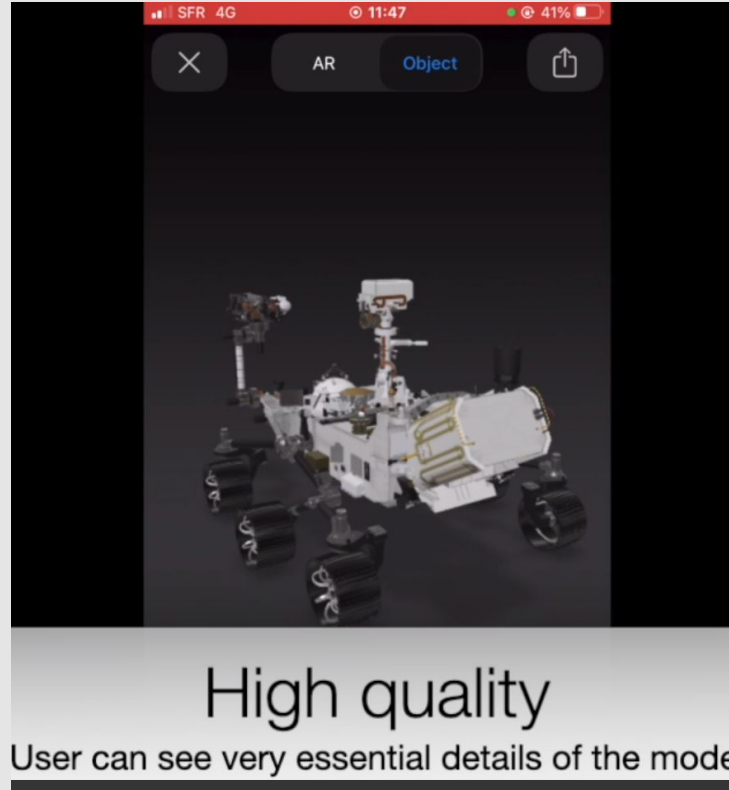
Phone requires different viewpoints to calibrate the camera and detect the depth

What can the user do with the app?

Here you could give a brief example what you can do: manipulate the size of the model and control its position on an on-set plane, previously detected with the help of ARkit



High quality models★



Depth Estimation and Surface Detecting



Different surfaces

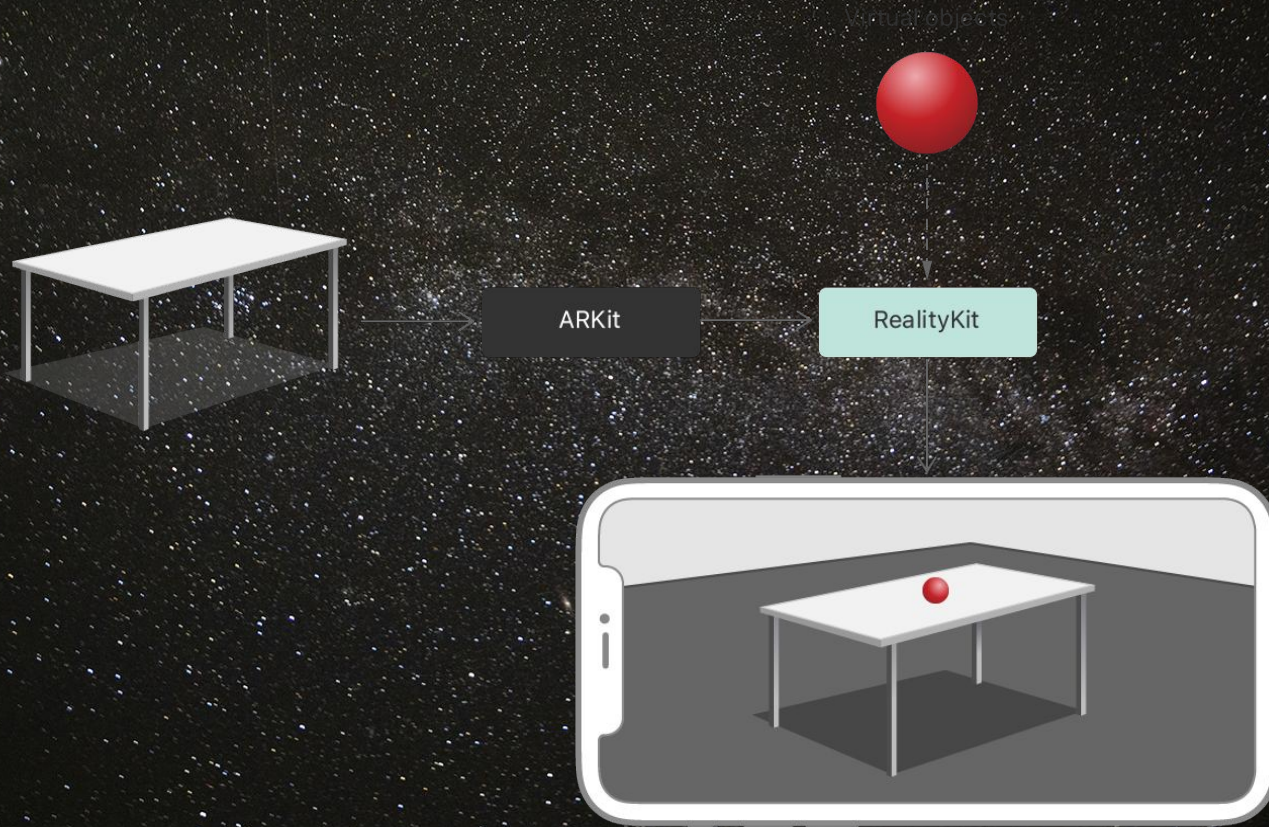
Object moves only on detected surfaces. They can be different according to the environment



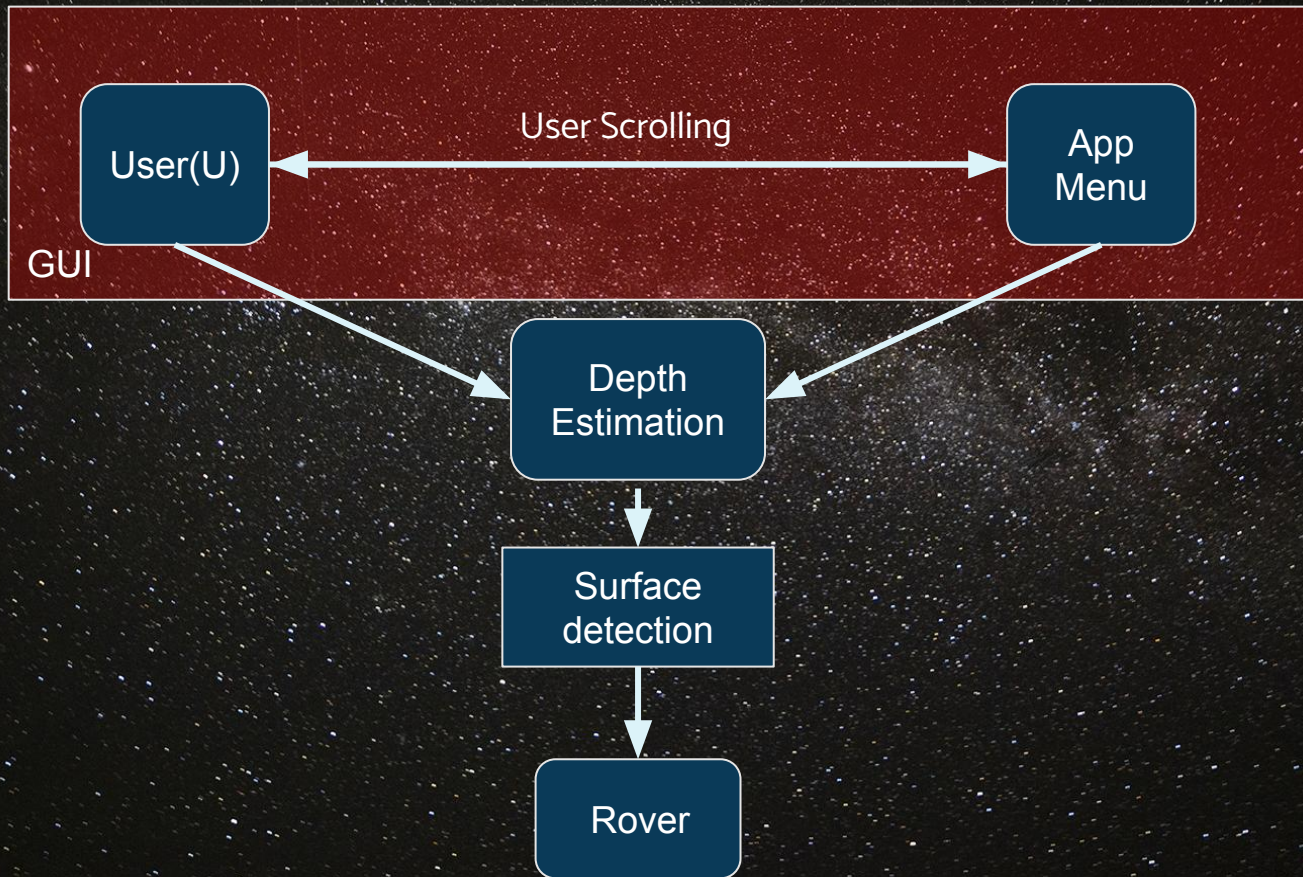
Different surfaces

Object moves only on detected surfaces. They can be different according to the environment

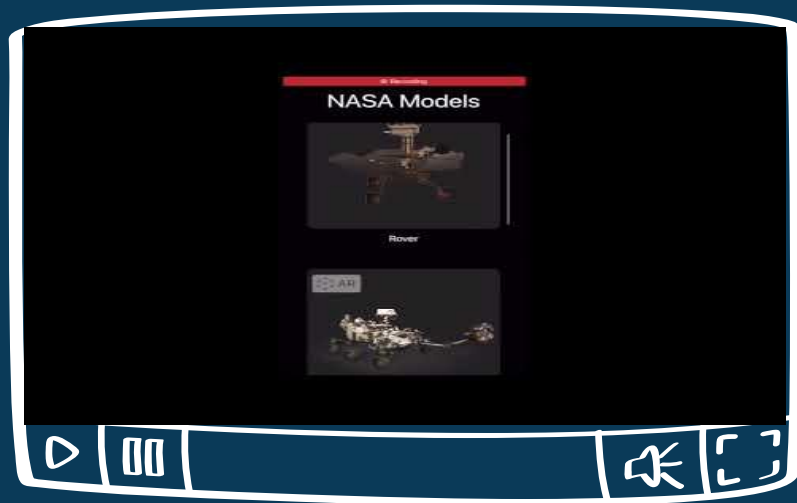
★RealityKit★



★Summary★



Application Demo:



References:

- [Mars.nasa.gov](https://mars.nasa.gov)
- stfalconcom.medium.com/augmented-reality-with-swift-5-how-to-start-19118c77dffe
- medium.com/twinkl-educational-publishers/create-your-first-ar-app-with-realitykit-and-swiftui-7c5d1388b5

Thank you for
Your
attention!

