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# Visual Navigation Using ORB-SLAM3

— By: Nicholas Sherman, Nolan Kuo, Niamat Zawad —

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# Goals

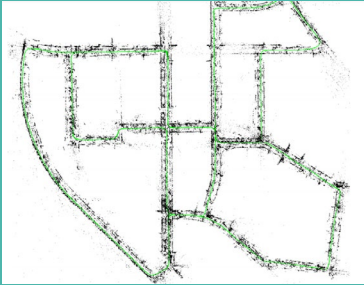


- **Create feature map using ORB SLAM3**
- **Transmit navigational data to phone application**
- **Direct user to destination**

# Layout Overview

ROS

ORB SLAM3

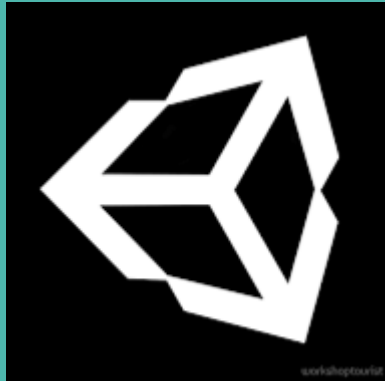


Feature Map  
and  
Position



Compressed Image Files

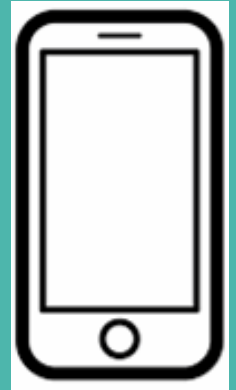
UNITY



Directions

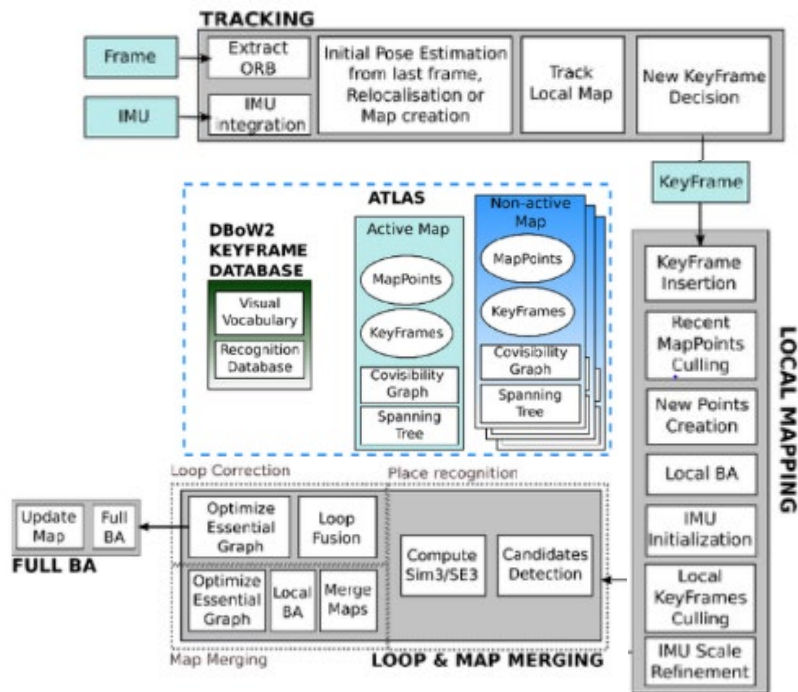


Camera Stream



# ORB SLAM3

## Essentials



Initialization.  
KeyFrames.

Tracking & Mapping.  
Merge & Loop Close.

# ROS

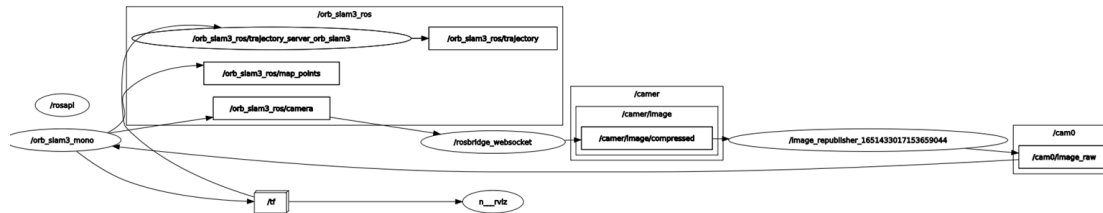
# ROS

R-Robot O-Operating S-System

Set of software libraries

Nodes/Topics for sending and receiving data

Handles communication to Unity using ROSBridge Websocket



# Unity

ROS

ROS #



Game Engine for UI/Simulation

Uses ROS# Package to communicate with ROS

Calculates position using realtime data from ROS

Provides interface for navigation

# Demo

<https://youtu.be/AXorT7DuGW4>

Questions?