Crash Prevention App

EC601 - Product Design

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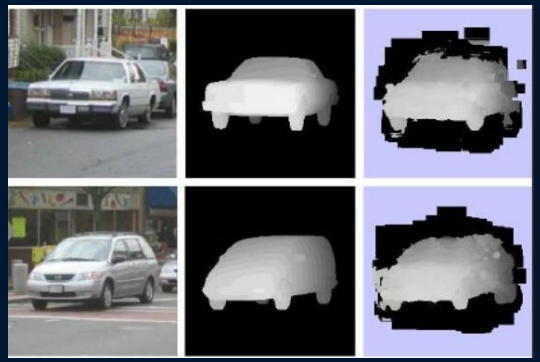
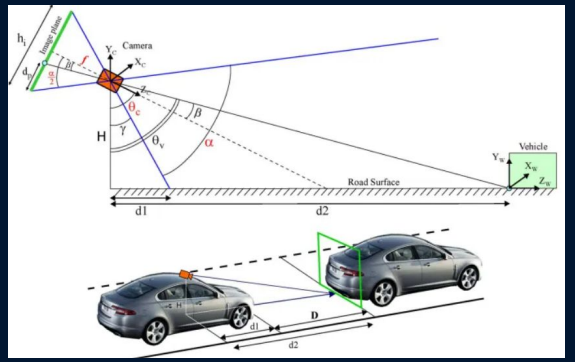
Sprint 1 goals

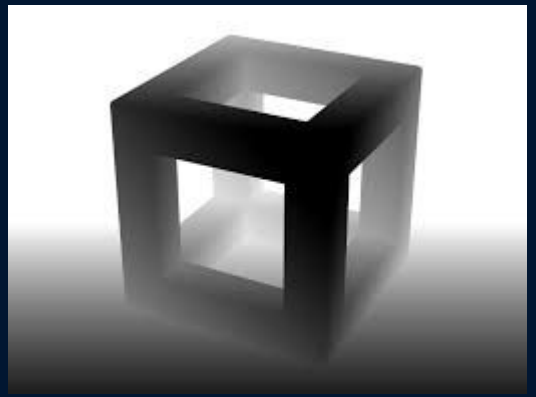
- Set up an app that will identify an object and get the depth map.
- Get the distance using the laser rangefinder.
- Combine both identify an object and get the distance from an object.





Depth Maps

- Depth maps are a representation of the distance from the camera to the subject for each pixel in an image.
- They are black and white
- The whiter the color, the closer is the object.



Confidence Maps

- Representative maps that provide more accurate information about the depth map created.
- These maps utilizes the LIDAR sensor and the camera but cannot provide any information about the distance.

Achievements

- Successfully loaded a demo application to an iPhone
- Successfully created a live depth map and confidence map
- Successfully exported the scan object.

What did not work

- Instead of using a laser rangefinder, we will be utilizing the created depth map and confidence map to measure the distance.
- Combining both the depth and confidence maps together to obtain a more accurate representation of the live image.

Sprint 3 Goals

- Integrate maps.
- Integrate ARKit 6 - Depth API
- Use `capturedDepthDataTimestamp` and `sceneDepth` to get the distance from device and object

RESOURCES

- Smart Traffic Management System | Smart Traffic system | FaststreamTech
- ARKit 6 - Augmented Reality - Apple Developer
- How a Laser Rangefinder Works (Explained!) | Outdoor Empire
- Artificial Intelligence in Tesla Vehicles | Xaltius
- What is Automatic Emergency Braking (AEB)? - Basic Guide (caradas.com)
- Xcode 14 Overview - Apple Developer
- https://github.com/TokyoYoshida/ExampleOfiOSLiDAR
- https://developer.apple.com/documentation/arkit/arframe/3566299-scenedepth
- https://www.wwdcnotes.com/notes/wwdc20/10611/

Thanks

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