

Handheld Texel Camera™

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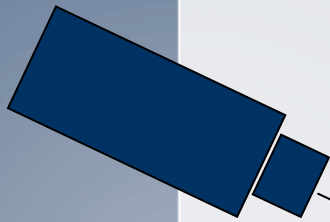
Utah State
UNIVERSITY



What is Flash Ladar?

Flash Ladar takes an **array** of ladar measurements at a time, instead of just one measurement at a time.

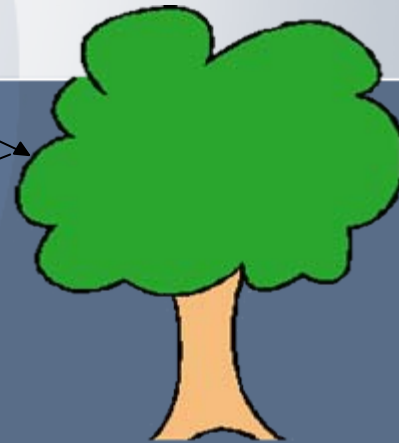
Light Source



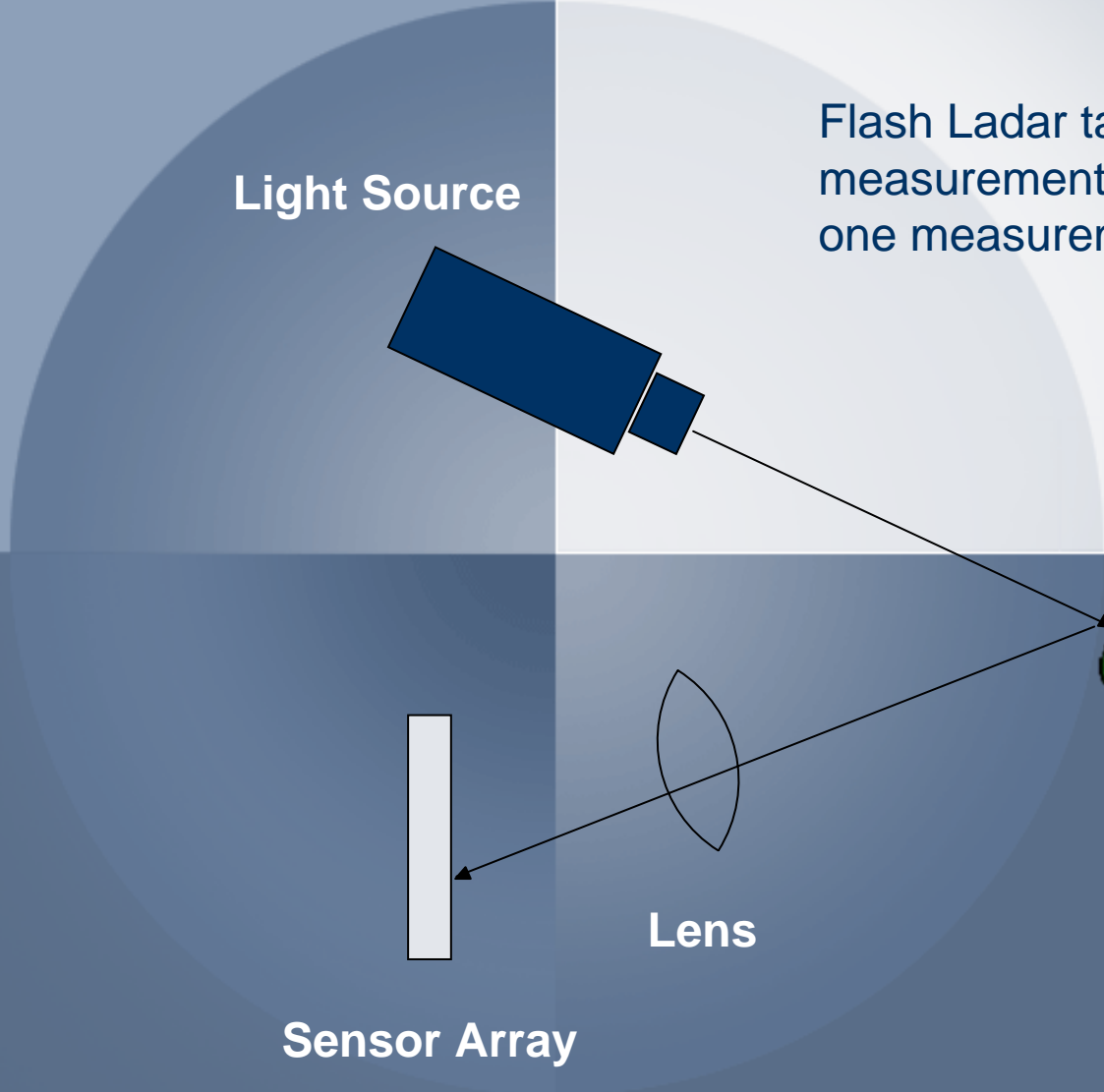
Lens



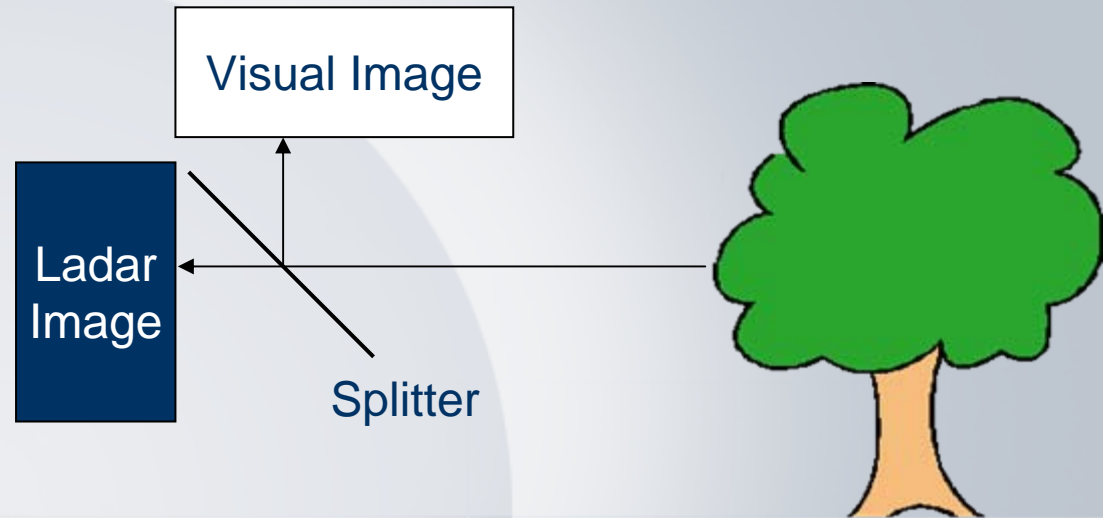
Sensor Array



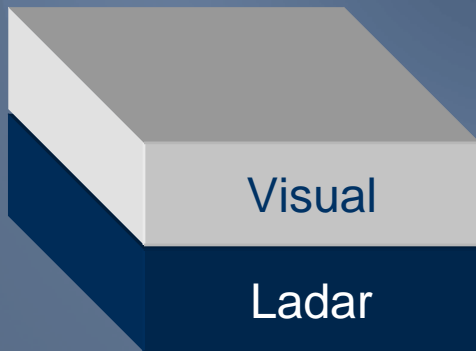
Object



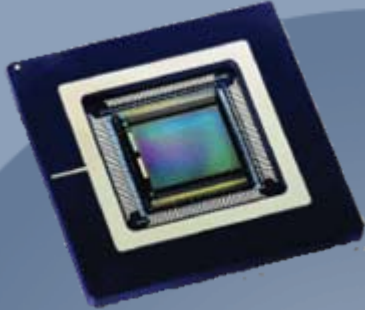
Flash Ladar to Texel Camera™



A Texel Camera™ is a device which captures ladar information at about the same time the visual information is taken. The two data sets are co-boresighted to eliminate any parallax issues.

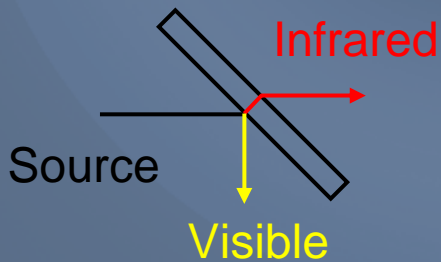


Building Blocks

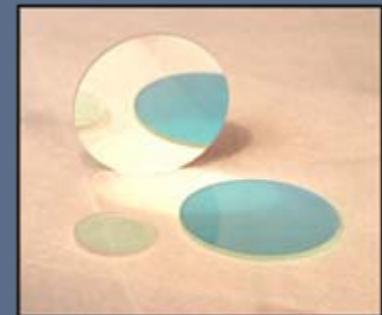


The imaging sensor chosen is a Micron 1280 x 1024 CMOS image sensor packaged into a stand alone development board.

The Flash Ladar sensor chosen is a Canesta 64 x 64 CMOS ladar sensor. This means that the sensor can generate a 64 x 64 range image simultaneously at multiple frames per second.

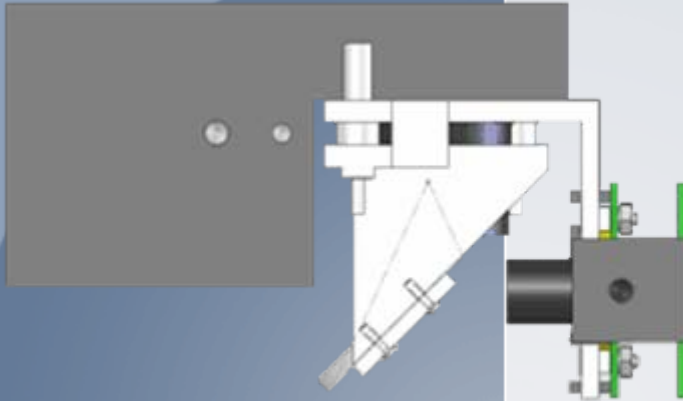


A cold mirror allows infrared light to pass through it while reflecting visible light.



Integration

Canesta Ladar Device

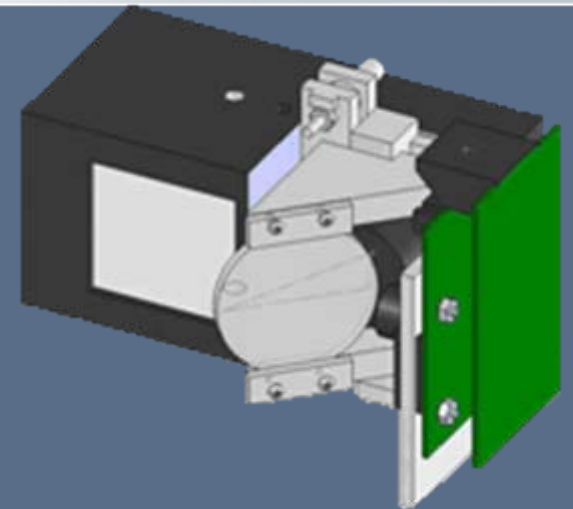


Cold Mirror

Micron Visual Camera

The two cameras are mounted 90° apart with the cold mirror mounted 45° to the cameras. This allows infrared data to be passed to the Canesta flash ladar camera and visible data to be passed to the Micron imaging sensor.

The two cameras are also mounted at a distance from the cold mirror such that the nodal point of the cameras intersect, thus each camera appears to be viewing the same scene.

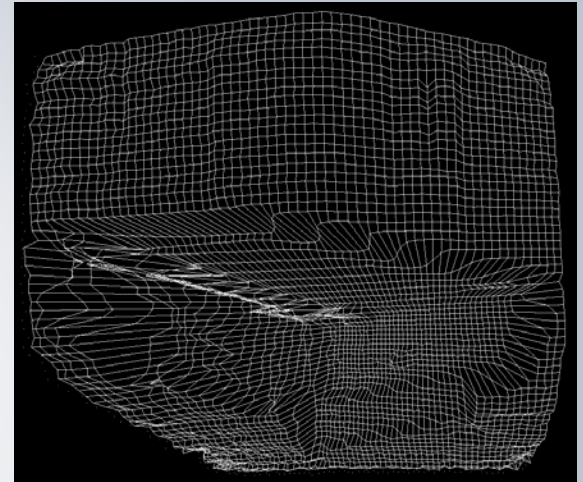


Handheld Texel™ Camera

Preliminary Results



Micron Visible Image



Wire Frame from Canesta Data



Texel Camera™ Surface

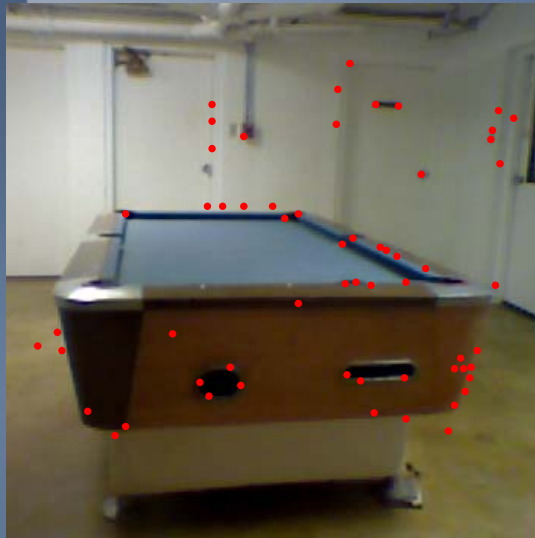
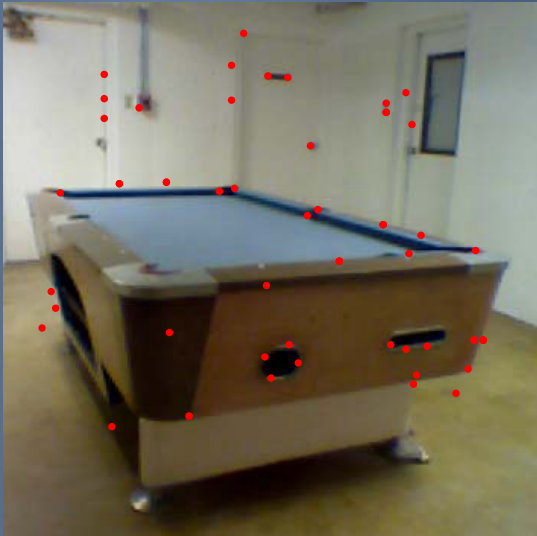


Demonstration

Current Research

Work is being done on merging scenes from several shots taken at different locations into one model.

This is accomplished by finding features from each scene and then trying to calculate the transformation between the two scenes.





Questions?