

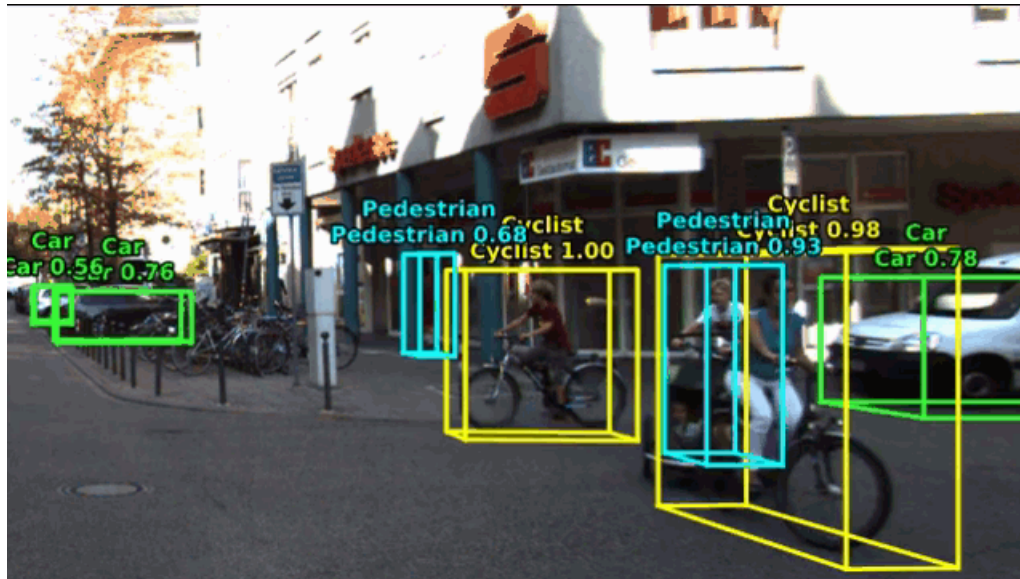
# The Camera Sensor

Course 3, Module 1, Lesson 1 – Part 1



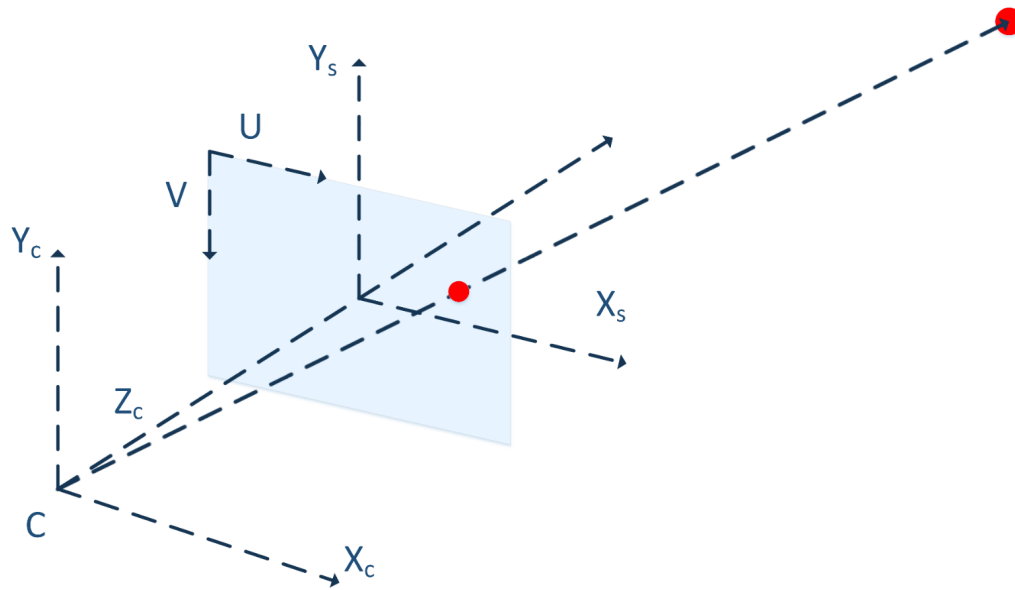
UNIVERSITY OF TORONTO  
FACULTY OF APPLIED SCIENCE & ENGINEERING

# The Camera Sensor



# In this module ...

- Overview of computer vision



## In this video ...

- Learn what makes a camera useful for self-driving cars
- Learn the characteristics of a camera as a sensor, and how images are formed

# The Camera Sensor

- Captures detailed appearance information
- High rate of information capture
- Relatively inexpensive

object detection,  
segmentation &  
identification

More information

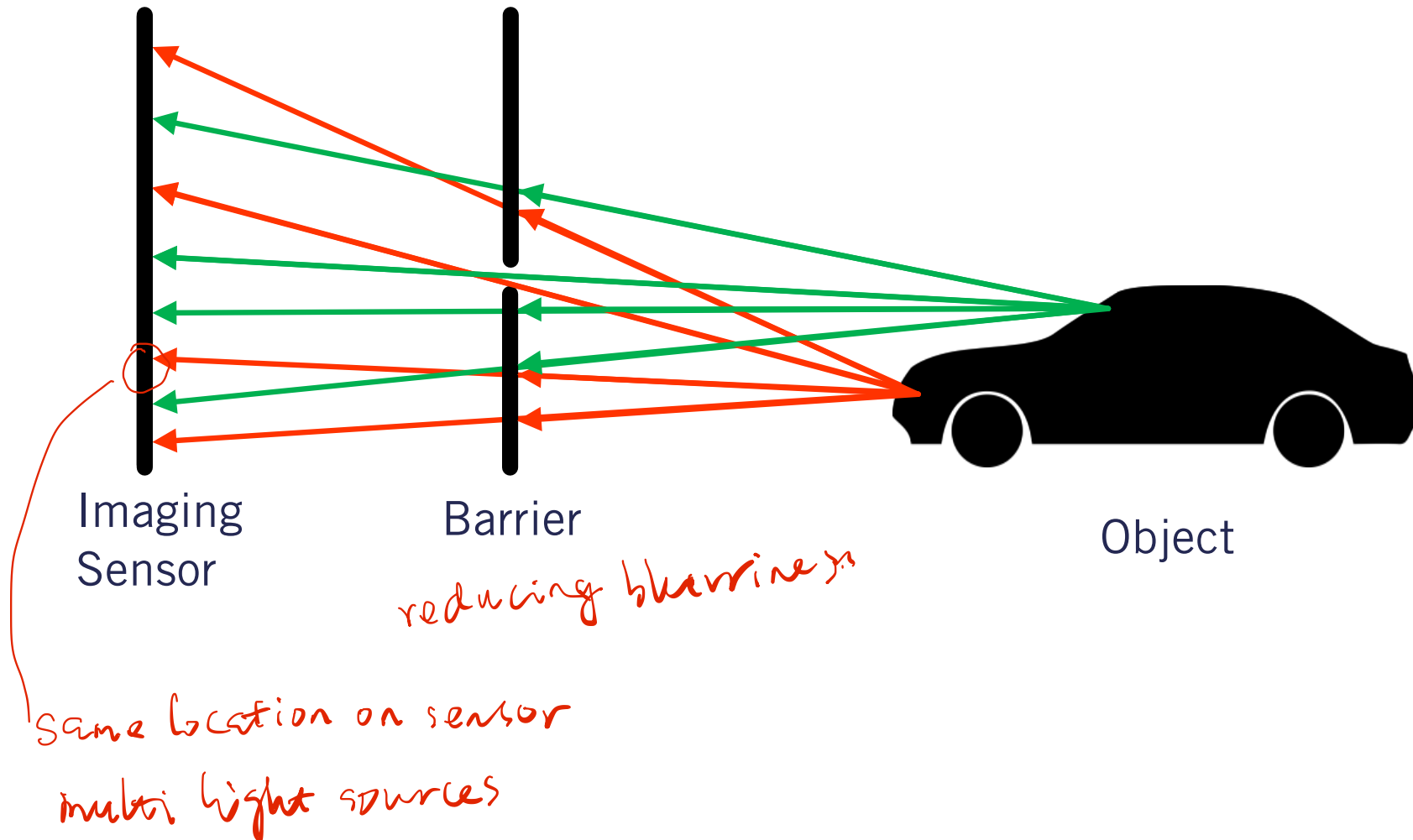
Sam: Can we add this video of a camera sensor here?

<https://www.shutterstock.com/video/clip-1022389735-camera-repair-sensor-digital-close-up-matrix>

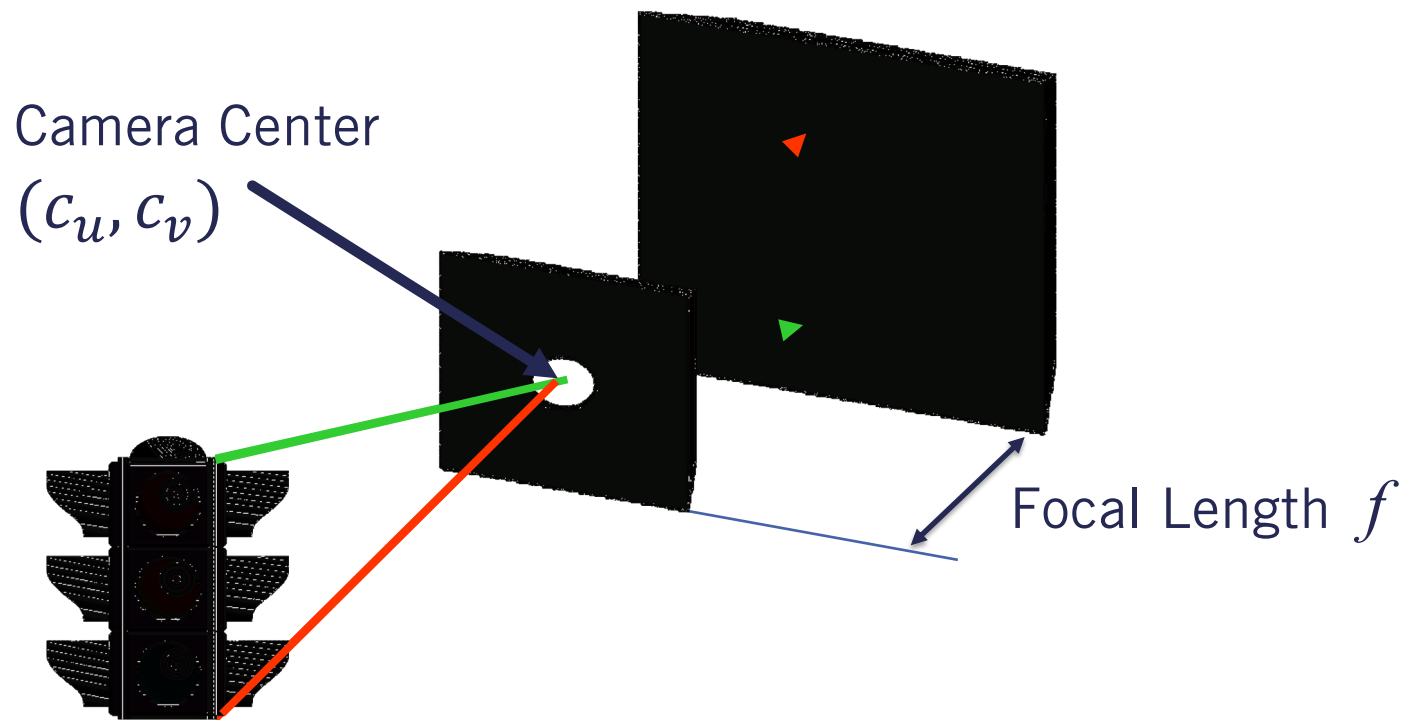
Sam: This image of driving with lots of signs and lights for click 1:

<https://www.shutterstock.com/image-photo/busy-traffic-during-rush-hour-amsterdam-1069610642?src=bLnVCTgF8bcUNe81sHDIVw-1-39>

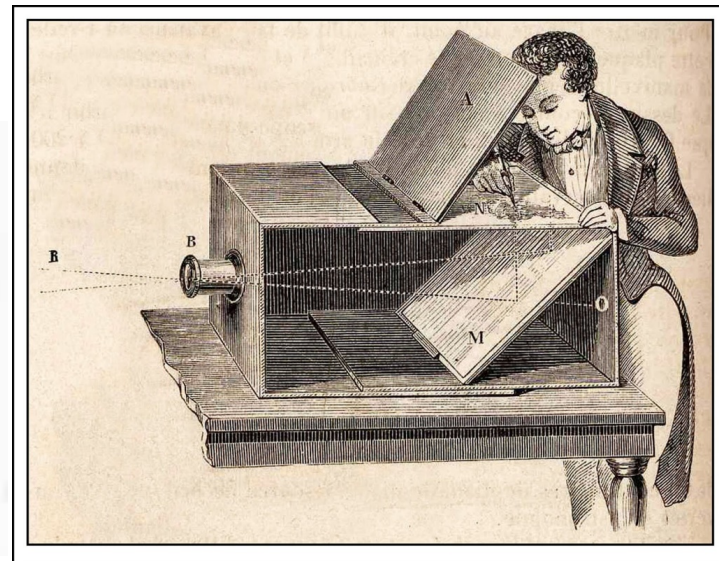
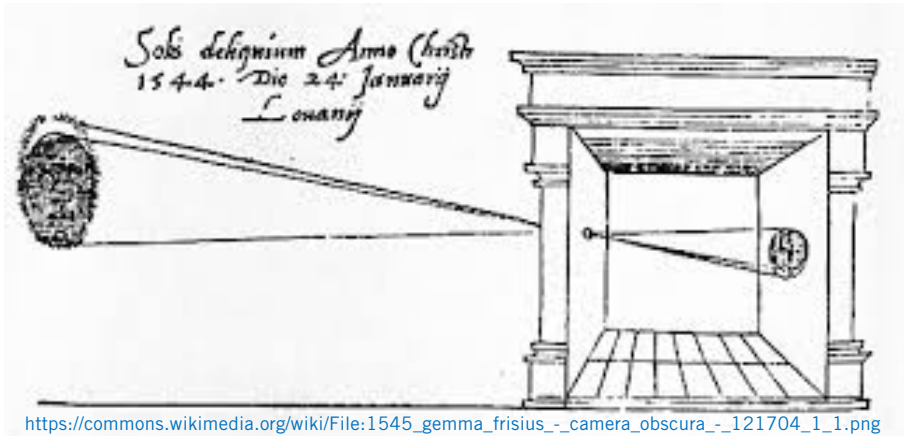
# Image Formation



# Pinhole Camera Model



# Camera Obscura: 1544 A.D.





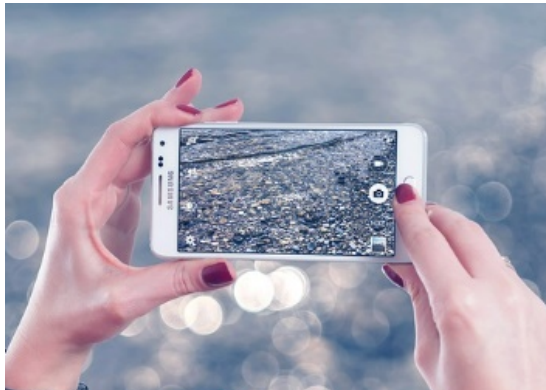
# Modern Day Cameras



<https://www.pexels.com/photo/4k-alone-andaman-and-nicobar-black-774343/>



# Ubiquitous Imaging devices



# Summary

- The camera is important as a sensor due to the amount of information it can capture, and its relatively small price tag
- The basic camera model has existed since the 1500s!
- **Next: Projective Geometry**