# ENGR 3421: ROBOTICS I

## RaspberryPi Camera

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# Outline



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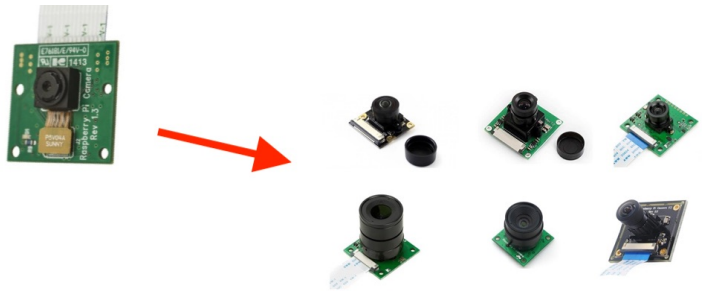
# RaspberryPi Camera



# picamera Library

Refer to the tutorial and the official documents.

```
from picamera import PiCamera
from time import sleep

camera = PiCamera()

camera.start_preview()
sleep(5)
camera.stop_preview()
```

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# OpenCV Video Capturing

```
import cv2

cap = cv2.VideoCapture(0)
cap.set(cv2.CAP_PROP_FRAME_WIDTH,640)
cap.set(cv2.CAP_PROP_FRAME_HEIGHT,480)
cap.set(cv2.CAP_PROP_FPS, 24)
for i in range(1000):
    ret, img = cap.read()
    # show the frame
    cv2.imshow("Frame", image)
    key = cv2.waitKey(1) & 0xFF
    # if the `q` key was pressed, break from the loop
    if key == ord("q"):
        break
cap.release()
cv2.destroyAllWindows()
```

# ArUco Marker

An ArUco marker is a synthetic square marker composed by a wide black border and a inner binary matrix which determines its identifier (id).

- Camera calibration
- Object size estimation
- Measuring distance
- 3D pose estimation