

ENGR 3421: ROBOTICS I

Python Advanced

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Outline

Class



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Object-Oriented Programming

Object Oriented programming (OOP) is a programming paradigm that relies on the concept of classes and objects. It is used to structure a software program into simple, reusable pieces of code blueprints (usually called classes), which are used to create individual instances of objects.



Function w/o Return

```
def forward(motor1, motor2, speed=1):  
    """  
    Args:  
        motor1: object instantiate from Motor class  
        motor2: object instantiate from Motor class  
        speed: scalar in range [0,1]  
    Return:  
        None  
    """  
    motor1.set_speed(speed)  
    motor2.set_speed(speed)
```



Function w/ Return

```
def compute_center(ul_coord, ur_coord, lr_coord, ll_coord):  
    """  
    Args:  
        ul_coord: array with shape (2,) or list with length 2  
        ur_coord: [x, y]  
        lr_coord: e.g. array(321, 456)  
        ll_coord: e.g. [321, 456]  
    Return:  
        center_coord: coordinate of center of the box represented  
        by a list with length of 2.  
    """  
    mean_x = (ul_coord[0] + \  
              ur_coord[0] + \  
              lr_coord[0] + \  
              ll_coord[0]) / 4  
    mean_y = (ul_coord[1] + \  
              ur_coord[1] + \  
              lr_coord[1] + \  
              ll_coord[1]) / 4  
    center_coord = [mean_x, mean_y]  
  
    return center_coord
```

