





마그누스의 힘코딩하기

GlowScript 2.7 VPython

#const.

g = -9.8 #m/s**2

rho = 1.204 #kg/m**3

Cd = 0.3

Cm = 1

w € 10*2*pi ∄ 10 rev. per sec

정상급 선수의 경우 1초당 10회전





마그누스의 힘코딩하기

```
#Magnus Force
magnus = 0.5*rho*Cm*
(pi*ball.radius**2)*ball.radius*w*mag
(ball.v)*cross(vec(0,1,0),norm(ball.v))
print("gravity: ", mag(grav), 'drag
force: ',mag(drag), 'magnus force:
',mag(magnus))
#Sum of Forces
ball.f = grav + drag + magnus
```





8주차, 축구공의 움직임 2 바나나킥 시뮬레이션





Profession web also

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```

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UI가 포함된 프리킥 시뮬레이션 코딩하기

##UI

scene.append_to_caption('\nInitial
Values\n\n')

- + 공을 찼을 때의 초기 속력
- ◆ 지면과의 각도
- + 회전 속도 등





UI가 포함된 프리킥 시뮬레이션 코딩하기

#slider
velocitySlider = slider(min = 0, max = 45,
value = 25, bind = setVelocity)
scene.append_to_caption('\nVelocity:',
velocitySlider.min, 'to' ,velocitySlider
.max, '\n\n')

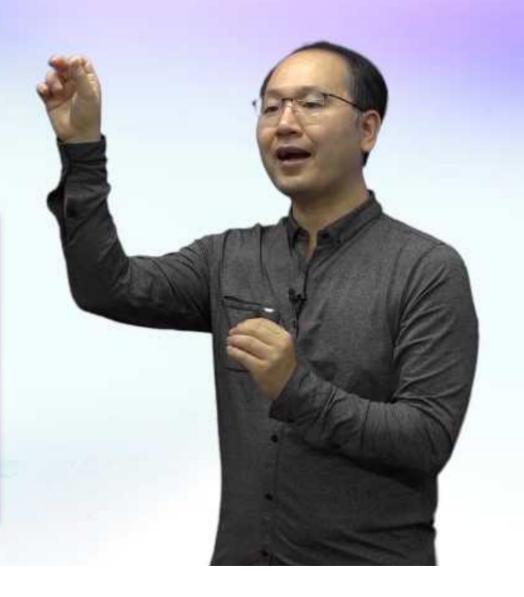




U)가 포함된 프리킥 시뮬레이션 코딩하기

def setVelocity():
 global ball
 ball.speed = velocitySlider.value
 ball.v = ball.speed*vec(cos(ball.angle),
 sin(ball.angle),0)

함수 안의 변수 ball은 광역 변수임을 나타냄







기가 포함된 프리크 시뮬레이션 코딩하기

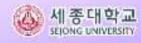
```
angleSlider = slider(min = 0, max = 90,
value = 35, bind = setAngle)
scene.append_to_caption('\nAngle:',
angleSlider.min, 'to' ,angleSlider.max,
'\n\n')
def setAngle():
    global ball
    ball.angle = radians(angleSlider.value)
    ball.v = ball.speed*vec(cos(ball.angle),sin(ball.angle),0)
```





UI가 포함된 프리킥 시뮬레이션 코딩하기

```
angularSlider = slider(min = -10, max = 10,
value = 10, bind = setAngualr)
scene.append_to_caption('\nAngularvelocity:'
,angularSlider.min, 'to' ,angularSlider.max,
'\n\n')
def setAngualr():
    global w
    w = angularSlider.value*2*pi
```





기가 포함된 프리킥 시뮬레이션 코딩하기

최초에 false로 두는 코드를 보여줘야함





기가 포함된 프리킥 시뮬레이션 코딩하기

```
if btnStart.disabled == True:
    ball.make_trail = True
    #Gravity Force
    grav = ball.m * vec(0,g,0) #gravity
```

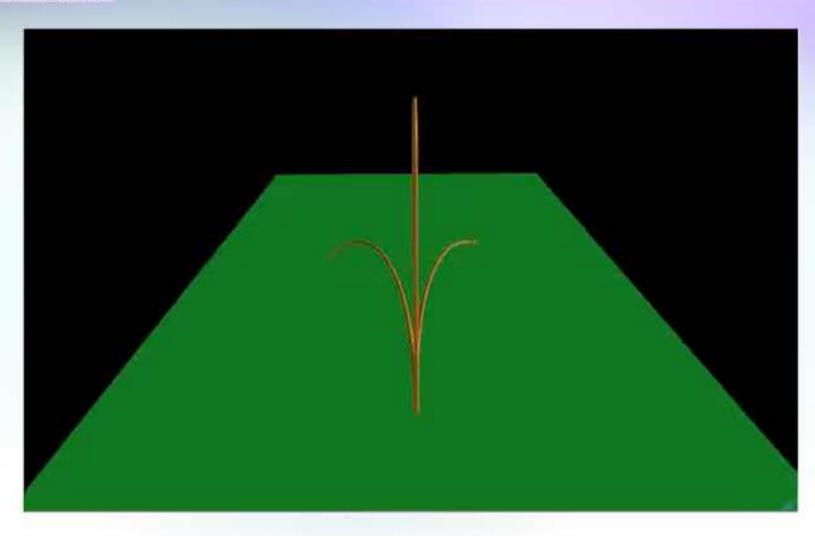
8주차, 축구공의 움직임 ॥ 바나나킥 시뮬레이션

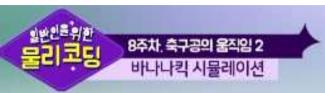


UI가 포함된 프리킥시뮬레이션 코딩하기

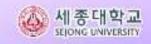
```
#collision
if ball.pos.y - ball.radius < 0:
     scene.waitfor('click')
     ##reset
     btnStart.disabled = False
     ball.pos = init_pos
     ball. V = ball.speed*vec(cos(ball.angle)
sin(ball.angle),0)
     ball.make_trail = False
     t = 0
t = t + dt
```







[자료출처]



- * www.glowscript.org
 - http://www.glowscript.org/docs/VPythonDocs/index.html

