

# Kahoot!

## Week02\_4010

2 plays · 21 players

 A public kahoot

### Questions (11)

#### 1 - Quiz

**What sampling rate makes sense for a discrete time kinematic model of a slow car?**





10 sec

-  1 second ✗
-  10 milliseconds ✓
-  25 microseconds ✗
-  5 seconds. ✗

#### 2 - Quiz

**According to our kinematic models, If the platform's heading is constant, and  $v(t) \neq 0$  ; what happens?**

20 sec

-  The platform follows a linear trajectory. ✓
-  ..it follows a circular trajectory ✗
-  it follows a sinusoidal path ✗
-  a ellipical path,  $x(t) = A \cdot \cos(a \cdot t)$ ,  $y(t) = B \cdot \sin(a \cdot t)$  ✗

## 3 - Quiz

If the steering angle is constant and  $\neq 0$  and  $v(t) \neq 0$  ; what happens?


20 sec

-  Trajectory is linear (linear shape) ✗
-  Circular trajectory ✓
-  Sinusoidal path ✗
-  polygonal path ✗

## 4 - Quiz

Which one/ones of the engineering units of the list, is/are adequate for measurements of a gyroscope?





20 sec

-  degrees ✗
-  degrees/second ✓
-  deg/sec<sup>2</sup> ✗
-  degrees\*second ✗

## 5 - Quiz

Rotation matrix. Is this rule valid?  $(R(\phi_x, \phi_y, \phi_z))^{-1} = (R(-\phi_x, -\phi_y, -\phi_z))$

20 sec

-  YES (always) ✗
-  usually NO (except certain cases) ✓
-  if the angles are normalized, YES ✗
-  Never ✗

## 6 - Quiz

**Rotation matrix . Is this rule valid?**

$$(R(\phi_x, \phi_y, \phi_z))^{-1} = (R(\phi_x, \phi_y, \phi_z))^T$$

20 sec

**YES (always)****NO**

if the angles are normalized, YES



Only for unity angles.



## 7 - Quiz

**Which of these sets of variables can be measured by a IMU?**

20 sec



3D angular accelerations + 3D accelerations



3D accelerations + 3D angular rates



3D linear velocities + 3D magnetometers



position in IMU's coordinate frame.



## 8 - Quiz

**Does a moving IMU provide gyroscopes measurements in its local coordinate frame, or directly in the global one?**

20 sec



Local one



Global one



it is configurable.







Local in 3D, global in 2D



## 9 - Quiz

**Can the Gravity affect the reading of the IMU's accelerometers?**

20 sec

-  no ✗
-  Only if the IMU is used upside down ✗
-  yes ✓
-  Only if the unit is not moving. ✗

## 10 - Quiz

**LiDAR: which of these angular resolutions make sense**



20 sec

-   $0.5^\circ$  ✓
-   $0.33^\circ$  ✓
-  1 radian ✗
-   $1^\circ$  ✓

## 11 - Quiz

**LiDAR: what was the FoV of the simulated LiDAR in the tutorial problems on week 1?**

20 sec

-   $[-80^\circ, +80^\circ]$  ✓
-   $[-110^\circ, +100^\circ]$  ✗
-   $[-\pi, +\pi]$  ✗
-   $1^\circ$  ✗

