04_02_obstacles_student_hs_

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5 Obstacle Avoidance – Student Version

In this lesson, you'll learn how to make the drone **react to obstacles** using sensor data. You'll write `if` statements that let the drone turn, stop, or move away when something is too close.

5.1 Command Reference Table

Command	Description	Parameters (units/type)
`takeoff()`	Drone takes off and hovers	height (m/float), speed (m/s/float)
`land()`	Lands the drone	speed (m/s/float)
`forward()`	Move forward	distance (m/float), speed (m/s/float)
`rotate()`	Rotate the drone left or right	angle (degrees/int), time (s/float)
`get_distances()`	Returns dictionary of sensor distances	None
`get_distances()['front']`	Distance to object in front (m/float)	None
`get_distances()['left']`	Distance to the left (m/float)	None
`get_distances()['right']`	Distance to the right (m/float)	None

```python
# Setup your simulator
from crazyflie_sim import CrazyflieSimulator
import time
drone = CrazyflieSimulator(real=False)
```

5.2 Step 1: Take off

Take off to **0.3 meters** at **0.2 m/s**

```
[ ]: # Your code here:
```

5.3 Step 2: Check for obstacles

Use `get_distances()['front']` to check the **front sensor**.

- If the value is less than **0.3**, print `Too close in front!`

```
[ ]: # Your code here:
```

5.4 Step 3: Avoid obstacle

Modify your code to do the following: - If `get_distances()['front'] < 0.3`, rotate 90 degrees - Else, move forward 0.2 meters at 0.2 m/s

```
[ ]: # Your code here:
```

5.5 Step 4: Loop your reaction

Repeat the obstacle check and response **4 times** using a loop: - Each time: check the **front sensor** value with `get_distances()['front']` - If less than 0.3 meters, rotate - Else, move forward

```
[ ]: # Your code here:
```

5.6 Final Step: Land safely

Land the drone at **0.3 m/s**

```
[ ]: # Your code here:
```