ARA

AUTONOMOUS DRONE CONTROL IN ADVERSE CONDITIONS

WHO WE ARE

ALEX

AAU Cybersecurity Student

RIFQI

AAU Communication Technologies Student

ANDRÉ

AAU Cybersecurity Student

THE CHALLENGE

Develop an autonomous drone control algorithm that can operate in adverse conditions.

1. The drone must navigate to and then hover at a specific location
2. It must be able to handle wind forces and a limited battery life
3. Your solution interacts with our simulation server and competes against the other teams!

KNOWN PARAMETERS

01

COORDINATES

- X, Y, Z coordinates of the target
- X, Y, Z coordinates of the drone

02

THROTTLE

Controls how much the drone accelerates.

03

PITCH

Controls how much the drone pitch (Y plane)

04

ROLL

Controls how much the drone pitch (X plane)

OUR APPROACH

4 STEPS

Getting accustomed to how it works and understanding the objectives.

OBJECTIVE

Apply P, I, or D control to throttle, roll, and pitch.

PID CONTROL

Set 2 phasing, “takeoff” and “stable”,

PHASING

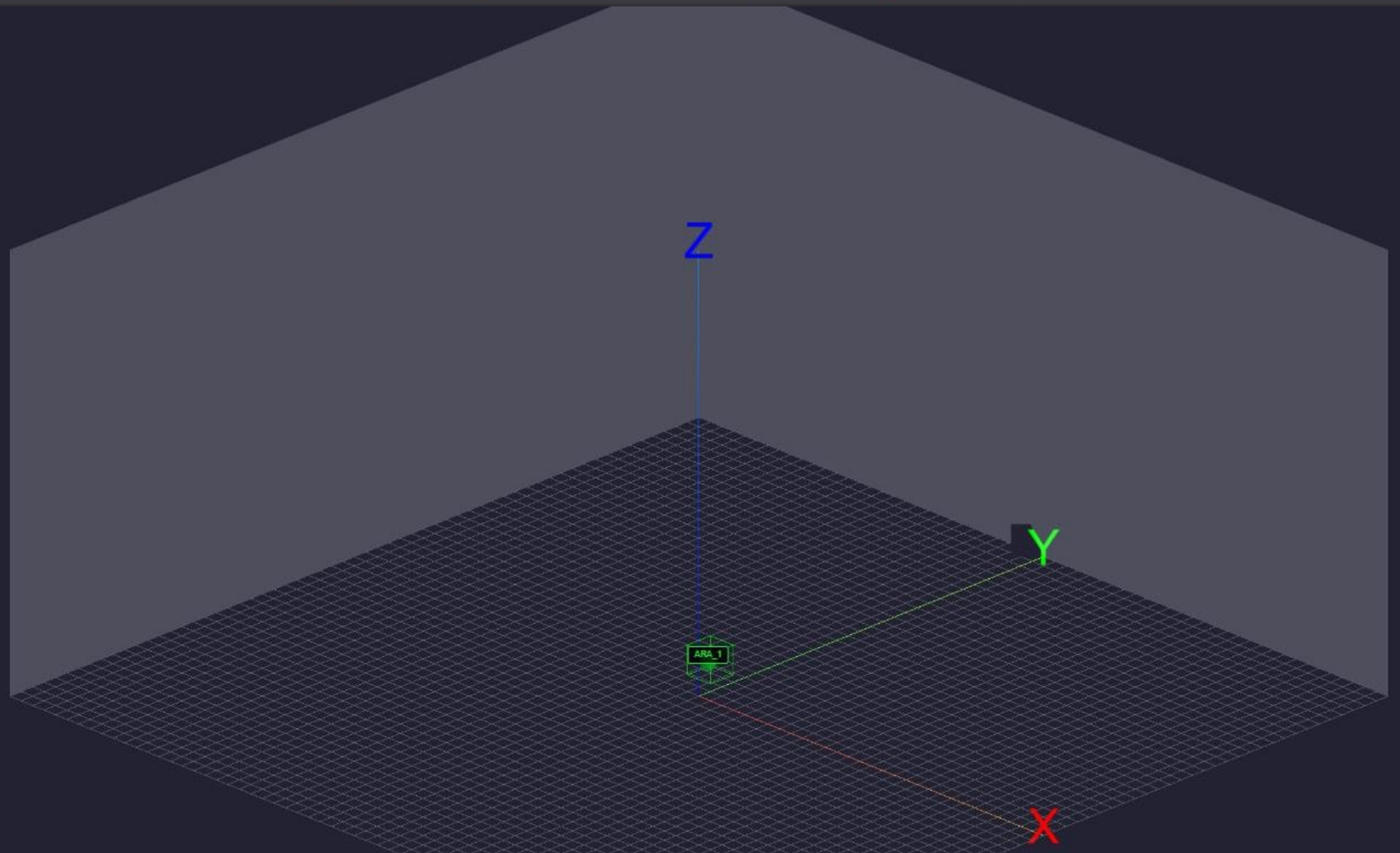
Counter roll/pitch the wind force

WIND COMPENSATION

Drone Viewer

Inseguro 172.104.137.51:10400/static/index.html

SAPO Gmail Moodle Calendário Outlook Google Maps Digital Exam Slack



Getting Started

To get the full instructions, run the following command:

```
curl http://172.104.137.51:10300/challenge
```

High Scores

Last updated: 11:00:01

#	Drone name	Score
1	ARA_1	1 374 702
2	Nexus	401 325

SIMULATION RESULT

18°C Ger. Nublado

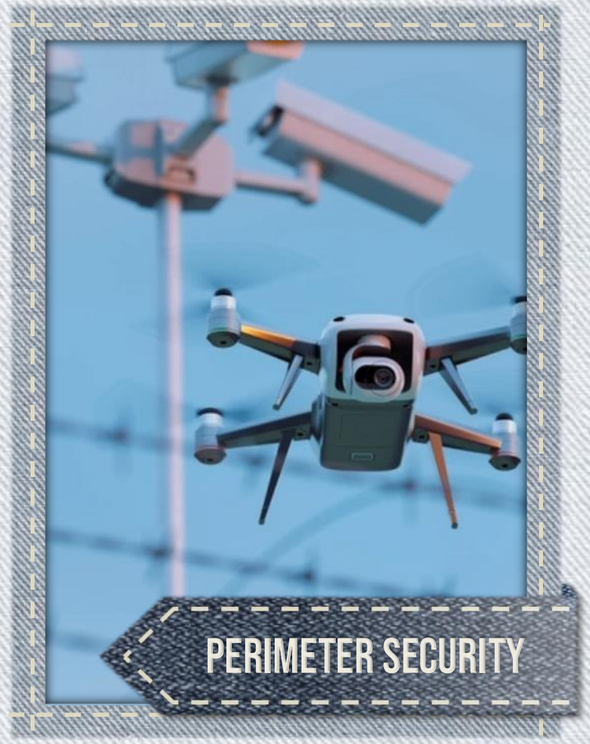
Procurar

POR

11:00 31/08/2025

POSSIBLE USE CASES

MEDICAL DELIVERY



PERIMETER SECURITY

DISASTER REPORT

S.A.R

THANK YOU

ARA – EDTH HACKATHON, COPENHAGEN