# Double Tracking Antennas for UAS Communication

## Control and Automation

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# Introduction





The project is about UAS:

- What ?
- Why ?
- How ?
- State each part and whom will present.

# Agenda





## Introduction

## Overview
- Hardware
- Frames
- Telecommunication

## Methods
- Modelling
- Controller
- Simulation

## Results

## Conclusion

## Unmanned Aicraft System (UAS)

1. Unmanned Aircraft (UA)
2. Ground Station (GS)
3. Antennas
4. DC Servomotor

# Frames

## Geodetic Coordinate System

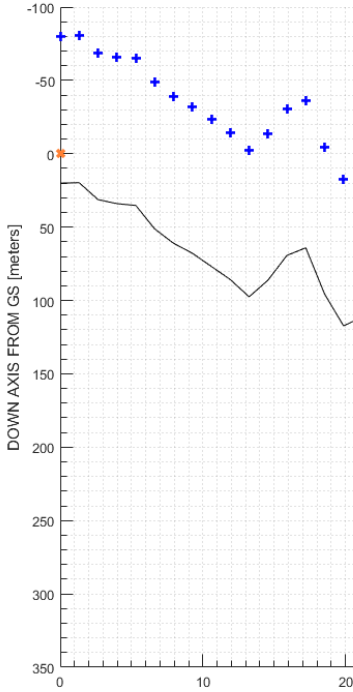
## Earth-Centered Earth-Fixed (ECEF)

## North-East-Down (NED)

## Body Coordinate System

## Main hardware components

- **GPS & IMU** - orientation & positioning
- **Low Level Interface (LLI)** - gather measurements
- **On-board computer (HLI)** - processing
- **Wireless Router (WIFI)** - network interface
- **DC motors** - movement
- **Robot Operation System (ROS)** - internal communication



## Moving Angle System (MAS)

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## Optimal Angle

## Antenna

# Controller

## PID

## Tunning

## Comparion

## LOS Coverage Map

## 2D UAS

## 3D UAS



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## Angle Range

## Earth Curvature

## Above GS

## Mountain

# Conclusion





We did this: ...
We can see that: ...
We conclude that: ...
Further work that can be built on the current project:



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Thank you for flying with us!

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