Directional antenna pointing system without using a navigation system to increase the UAV's communication range

BRICS2024-DroneDirection

What problems are we solving?

01

Poor signal quality over long distances

02

The need for GPS and compass for positioning

03

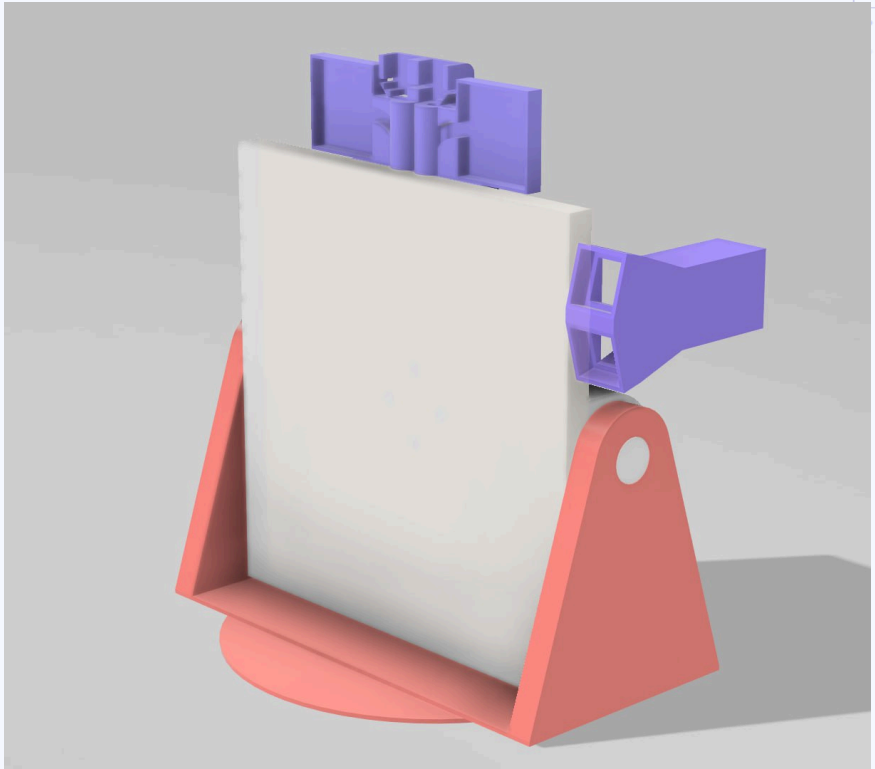
High cost of GPS solutions

04

No mass-implemented analogs in the Russian Federation

Solution

Directional antenna pointing system without using a navigation system to increase the UAV's communication range



Advantages

No need for drone telemetry data

Increases the working range of the antenna

No compass or GPS required

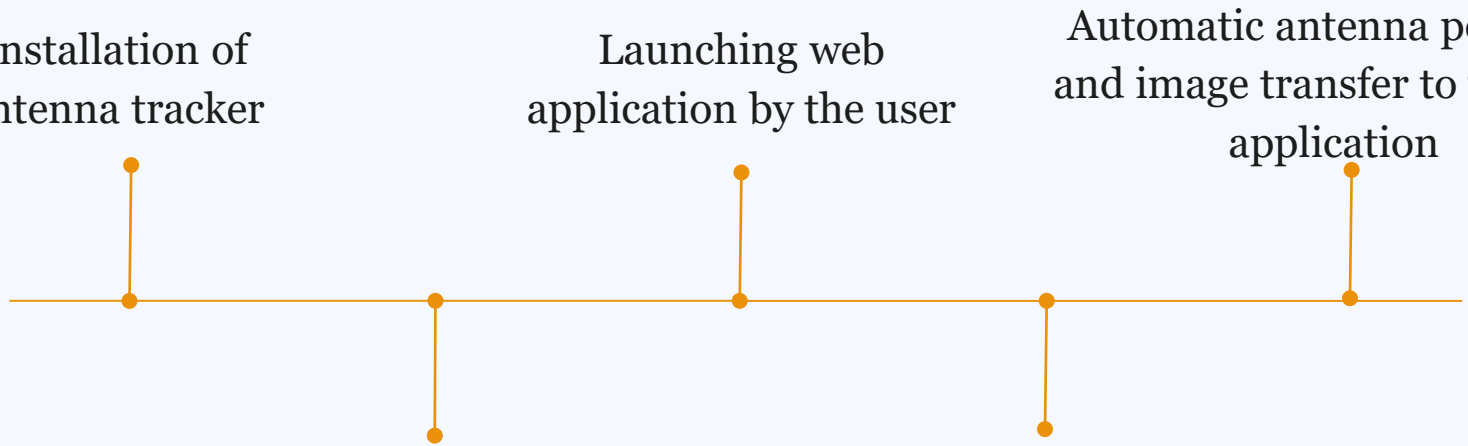
Low cost of components

Russian software

Complex product software + hardware

How it works

Process


Installation of antenna tracker
Connection of the device to the operational network
Launching web application by the user
Search for the UAV video channel
Automatic antenna pointing and image transfer to the web application

Key benefits

01

No need for drone telemetry data

02

Automatic antenna pointing based on signal strength

03

2S-6S battery power

04

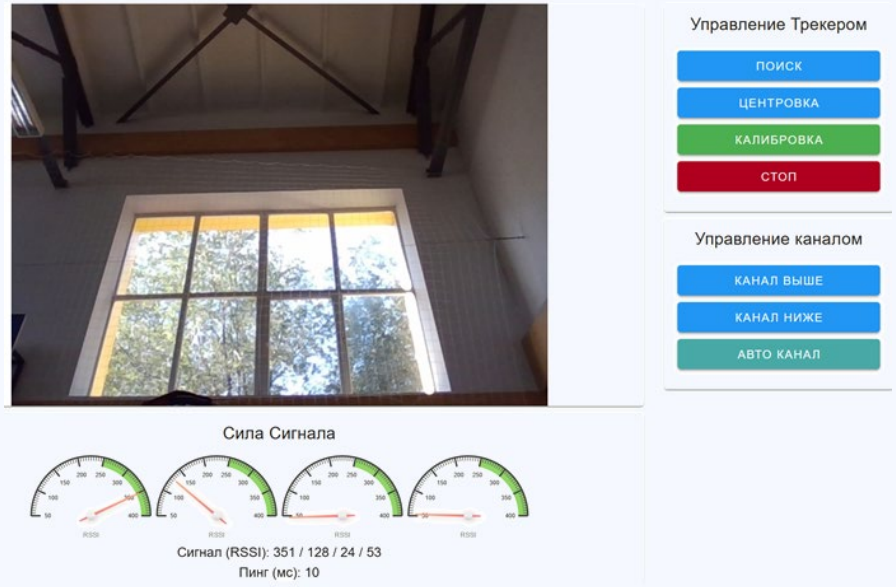
User-friendly web application for management and use

05

Stable communication over long distances

Software

Application user interface with buttons for tracker control, channel selection, and displaying telemetry from antennas.



Hardware

- Directional antennas for horizontal pointing
- Directional antennas for vertical guidance
- Directional antenna for video signal reception

Usage options

Racing

Cheaper cost per flight hour when broadcasting UAV video over long distances

Forest fires

Low cost of components installed in the UAV in the face of the equipment loss risks

Educational institutions

Can be used for educational purposes due to the low cost of components

Technology

Hardware

Server: Raspberry Pi
Antenna Tracker:

- Arduino
- SkyDroid PF V 5.8G
- Directional Antennas

Development Environment

Frontend: Vue.js
Backend: Python (FastAPI)
Antenna Tracker: C lang

Progress to date

Now

- developed web application
- analog antenna tracker
- antenna tracker design

In the future

- web application modernization
- implementation of a digital communication model
- modernization of the design to increase durability
- design simplification

Thanks for your attention!

Competitors:

- Romanov Pavel
- Kolupaev Ivan
- Morochko Alexander
- Laukhin Daniil
- Gerasin Vladislav
- Dareev Ganil