



CloudStation

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Background

- Problems addressed:
 - Limited control range of ground control stations on the market
 - High cost of connecting several drones to the same ground control station
 - High cost and difficulty of setting up a system where multiple operators can control the drone at the same time from different locations
- A good solution because:
 - Easily scalable, it can easily control large number of drones at the same time
 - Infinite control range
 - High availability & Portability
 - Low cost

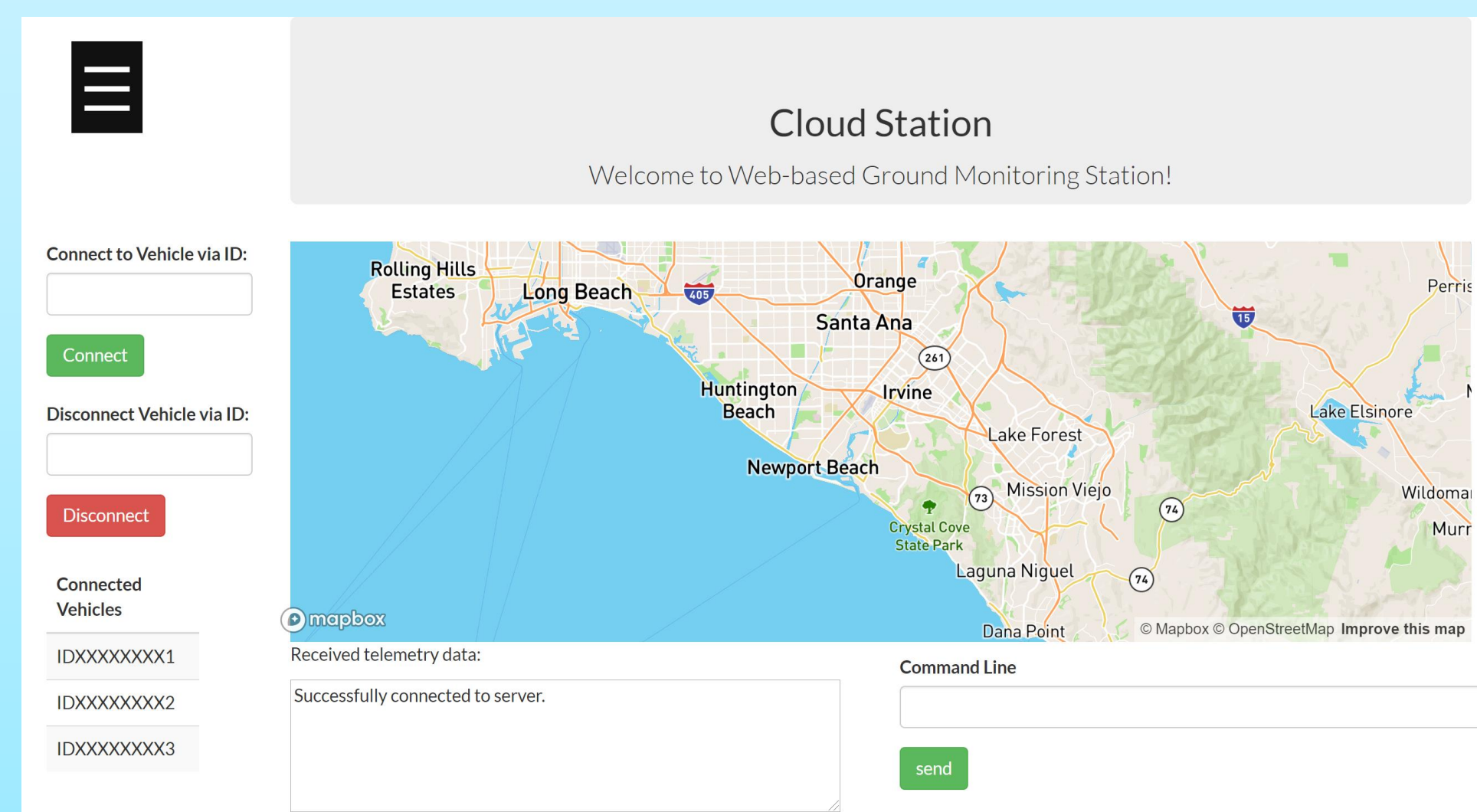
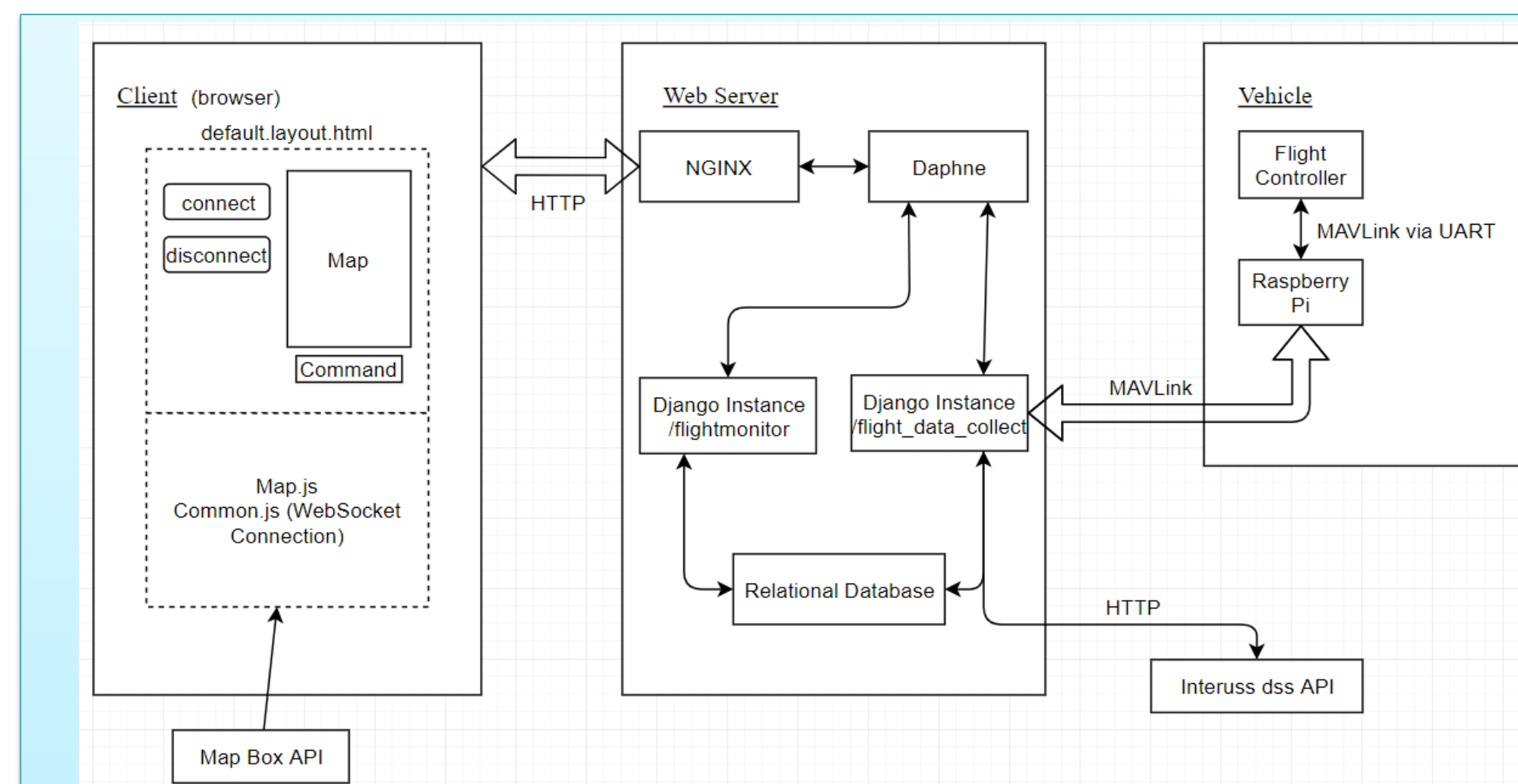
Future work

- Improve front-end UI and add security features
- Ability to control vehicle motion remotely
- Make vehicle drive to destination location autonomously
- Allow user registration on UI
- Write documentation and setup for public users
- Testing and deployment for free public use
- Finish scholarly paper

Project Goal

Have a cloud-deployed, functioning telemetry tracking of an unmanned vehicle and controlling it in waypoint mode through a web-app deployed on AWS. In the end, our goal is to fully deploy the CloudStation app and demo it on a vehicle across the globe.

Diagrams



Accomplishments

- Open-sourced existing code
- Deployed on AWS
- Made back-end more robust and design for high availability
- Setup hardware to send and receive vehicle MAVLink packages
- Built front-end:
 - Track location of the unmanned vehicles and display it on a map
 - Display vehicle orientation and speed information
 - Have support to monitor multiple drones
 - Implement user logging in and credentials

References

- J. Burke, Peter. (2019). A safe, open source, 4G connected self-flying plane with 1 hour flight time and all up weight (AUW) < 300 g: Towards a new class of internet enabled UAVs. IEEE Access. PP. 1-1. 10.1109/ACCESS.2019.2917851.
- A. Koubâa, A. Allouch, M. Alajlan, Y. Javed, A. Belghith and M. Khalgui, "Micro Air Vehicle Link (MAVlink) in a Nutshell: A Survey," in *IEEE Access*, vol. 7, pp. 87658-87680, 2019.



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