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To: ematson@purdue.edu and lee3450@purdue.edu

From: Beer per Day

- Shinhyoung Jang(201802151@o.cnu.ac.kr)
- Byeonghwi Park(201802093@o.cnu.ac.kr)
- Juheon Jeong(201802155@o.cnu.ac.kr)

Summary

All the team members make an individual today's plan related to the project.

- Bought a drone that works with mobile SDK.
- Wrote INTRODUCTION and RELATED WORKS content.

What Beer per Day was completed this week:

- **Select which drone to use**
 1. Drone needs to be affordable to get latitude, longitude, and altitude.
 2. Drone needs to be affordable to get velocity in x, y, and z.
 3. Mobile SDK v4, v5 provide above functions.
 4. DJI AIR 2S is fit with v4.
- **Write content in INTRODUCTION**
 1. Problems
 - a. UAVs are taken part in as military aircraft.
 - b. Detecting UAVs work has conducted several works.
 - c. Example that misjudged UAVs.
 2. Paper suggests
 - a. Take a picture of unidentified UAVs at a close distance.
 - b. Chasing is the main option to make distance closer.
 3. Experiment
 - a. Use the DJI drone as a chasing and chased drone.
 - b. Build an application(interface) to pull out data from a chasing drone. (Getting an aeroscope is not possible now)
 - c. Feed data to the prediction model and calculate the performance.
 4. Good things from method
 - a. Cheaper than buying a camera lens.
 - b. General way to identify UAVs.
- **Write content in RELATED WORKS**
 1. Bring TSPI from the UAV.
 2. Relation between TSPI and predicted trajectory[1][2][3].

- **Interface implementation**

1. Find SDK tools for iOS, and Android.
2. Solved SDK environment problems from iOS 16.2 version, and Android 12(31) version.
3. Find the chasing method at the SDK tool.

Things to do by next week

- Add a method that pulls out the data from drones into the DJI sample app.
- Review INTRODUCTION and RELATED WORKS.
- Configure with a prediction model.

Problems or challenges

- Need to use a simulator to get data. (flying is restricted in or outside)
- Need to choose which model to predict trajectory.
- Need to display the waypoint of the drone with google map API.

References

- [1] Z. Zhao, L. Zhang and J. Mao, "A Deep Learning Approach for Aircraft Trajectory Prediction in Pre-Tactical Stage," in *2022 5th International Symposium on Autonomous Systems (ISAS)*, 2022, pp. 1-6
- [2] X. Lei, D. Dali, Z. Hongpeng, W. Jianpu and Z. Zhuoran, "UCAV maneuvering trajectory prediction based on PSO-CNN," in *2021 International Conference on Computer Engineering and Application (ICCEA)*, 2021, pp. 54-58
- [3] P. Shu et al., "Trajectory prediction of UAV Based on LSTM," *2021 2nd International Conference on Big Data & Artificial Intelligence & Software Engineering (ICBASE)*, 2021, pp. 448-451.