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From: TOP GUN

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### **Summary**

Team Top Gun is almost done developing artificial intelligence models this week. The following plans were then discussed. Team Top Gun decided to divide team members into two different teams, one team responsible for making the application and the other team responsible for apple detection.

## What TOP GUN completed this week:

- The machine learning team tried using various models such as, the XGBoost model, LGBM model, and Pycaret module to get higher accuracy than using the linear regression model
- To solve the Data imbalance problem, the machine learning team tried a new data preprocessing method.
- The machine learning team got 80% accuracy from extra three regression using Pycaret module.
- The deep learning team tried using the Tabnet regression, the Efficient net B 3, 5, 7, and Efficient V2-L, V2-XL.
- The deep learning team got 77% accuracy by using the Efficient net B 5 model.
- Team members were divided up into 2 teams. One team is responsible for making the application and the other team is responsible for detecting the apple.
- Jeff is developing his deep learning model.
- Kyung is looking for better features for the prediction

# Things to do by next week

- Make ensemble models for both machine learning and deep learning.
- Start making an application.
- Implement an apple detection function.
- Improve model performance

### **Problems or challenges:**

- The accuracy does not come out when using this Efficient V2 model.
- Found it difficult using the PyTorch.
- Spent a lot of time planning about implementing an application.

• Found it difficult to build a server.

### References

U.S. Department of Agriculture. World Production, Markets, and Trade Report (2022, Jun, 14), *Fresh Apples, Grapes, and Pears: World Markets and Trade*. [Online]. Available: https://apps.fas.usda.gov/psdonline/circulars/fruit.pdf

Schwallier. P, "Checking apple maturity: What to look for," Michigan State Univ. Extension, Aug. 28, 2012. Accessed: Oct. 6, 2022. [Online]. Available: https://www.canr.msu.edu/news/checking\_apple\_maturity\_what\_to\_look\_for