• Princess Chulabhorn Science High School Chiang Rai

Assam Tea Inspector
A system for checking the characteristics of Assam tea leaves
with deep learning data collection
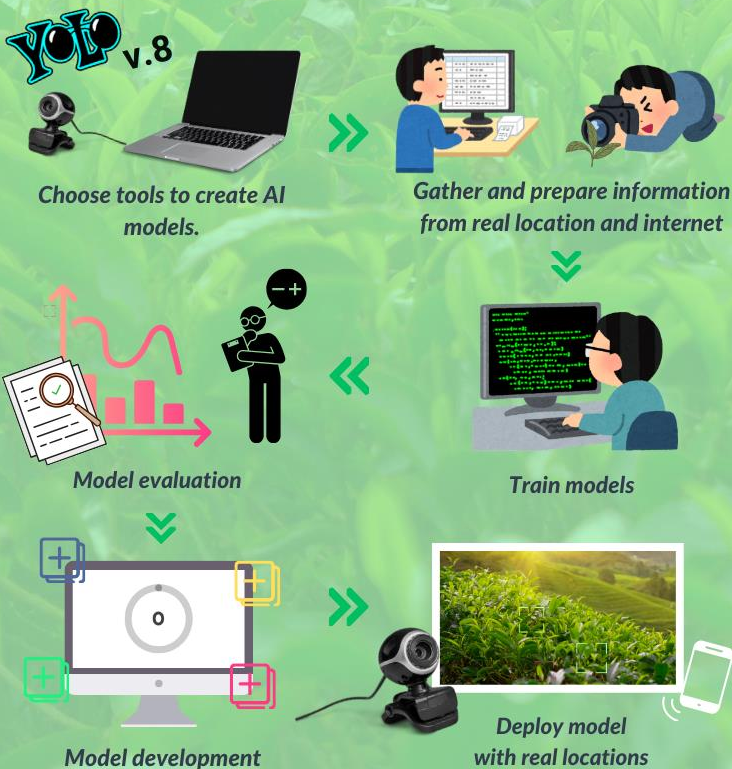Poomipat Tamwong , Pussakorn Tapjak Advisers: Manatchanok Tamwong

PROBLEM

Thai tea industry is likely to develop in future

New investors are turning their attention to investing in tea businesses.

Community enterprise

Low capital to hire labor.

Have low/no experience

Have small number of labor

OBJECTIVE

- Helps reduce the time spent exploring tea plots.
- Reduce the cost of hiring labor.
- Helps farmers who have no experience in growing tea and community enterprises to know the characteristics and number of tea leaf shoots that are ready to harvest, making it more convenient.

FRAMEWORK

YOLO v.8

Choose tools to create AI models.

Gather and prepare information from real location and internet

Model evaluation

Train models

Model development

Deploy model with real locations

FINDING

The AI model was tested for efficiency, accuracy, and detection of tea leaf properties before harvesting. It was calculated using prediction (Precision) and detection values (Recall).

The AI model achieved a maximum F1 Score of 0.52, indicating high accuracy.

F1 score

Recall

Precision

Examples
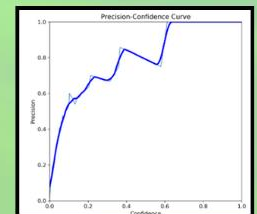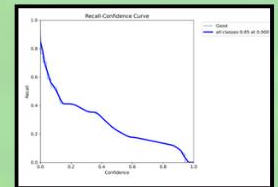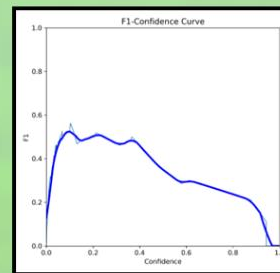
INTERPRETATION AND CONCLUSION

The AI model (Object Detection) was tested for accuracy in detecting ready-to-harvest tea leaves. It is discovered that the maximum guess

(F1 score) of 0.52 indicates that it is extremely effective. The chance of detection (Recall) will range between 0 and 1, indicating that the model can detect almost all tea leaves. The likelihood that the model can predict correctly (Precision) ranges from 0 to 1, suggesting that the model is highly likely to be able to anticipate the properties of tea leaves that are ready for harvest.

REFERENCE

(1) This agricultural product standard applies to fresh tea leaves. It is derived from a plant scientifically known as *Camellia sinensis (L.) Kuntze,* a species of Theaceae that is produced commercially in Thailand for sale as fresh tea leaves used for cooking or as raw materials for processing into tea products.
(2) *Department of International Trade Negotiations*; Considering the import–export of tea products, it can be seen that Thailand imports tea in an average volume of about 5 times more than exports in the past 5 years (2015 – 2019).
(3) *Suwirun Thai Tea Information about tea*, especially Assam tea, in various aspects, from cultivation to processing.
(4) *J Food Sci Technol. (2019)* Recommended storage temperature for green tea based on sensory quality