

IMPPEACH



INTEGRATED MODEL AND PLATFORM FOR HARVEST PREDICTION OF CANNED PEACHES

The IMPPeach project's primary objective is to deliver accurate prediction of yields/quantities and harvest dates for optimum maturity of peach cultivations (canned peaches varieties) in order to optimize the production planning for canning facilities.

For any fruit canning business, improving the prediction accuracy of the fruit quantities and harvest dates is of critical importance to production planning and execution. The benefits from improved harvest and yield prediction accuracy include a) increase in efficiency, b) added value for the products, c) gains in market share and d) increased profit margins. These benefits affect not only the canning business itself but are shared with all stakeholders including a larger number of smallholder farmers that typically are the fruit suppliers.

BACKGROUND

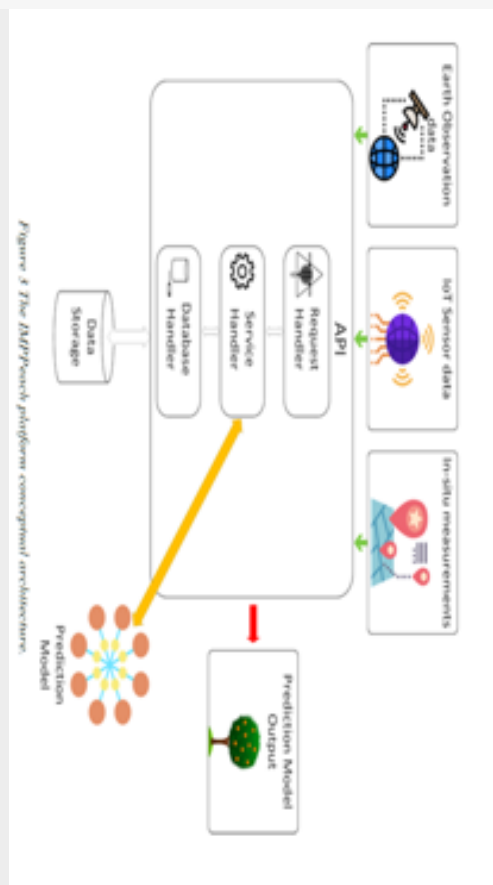
The fruit canning industry has to deal with the uncertainty in terms of harvest dates and yields. Production planning and satisfying customer and market demands is a challenge due to variations in fruits produce: harvest dates, fruit size and qualitative characteristics, and yielded quantities fluctuate from year to year due to continuous changes in the crop-soil-environment system: Different weather conditions, diseases, variations in farming practices and market dynamics are among the main reasons of the variability.

For any fruit canning business, improving the prediction accuracy of the fruit quantities, harvest dates and characteristics is of critical importance to the production planning and execution. Benefits include increase in efficiency, added value for the products, gains in market share and increased profit margins. The benefits are shared by both the canning business and the farmers/fruit producers.

MAIN PROJECT ACTIVITIES

We aim to achieve these objectives by employing AI/ML, RS and IoT technologies and integrating them into a digital platform customized for the peach industry, that will provide:

- Digital geo-referenced records of cultivated fields along with historical crop-variety data: harvest dates, yield quantities etc.
- Historical and current RS (satellite) image time series of the fields and corresponding vegetation indexes to derive parameters like plant vitality, Chlorophyll content, water stress, leave pigments (e.g. NDVI, CIRE, NDW) as well as phenological parameters.
- Field data (climatic and soil conditions), cultivation data (e.g. irrigation) crop and fruit data (size, growth rate) through both an IoT sensor network and field scouting.
- A model that predicts the harvest dates and quantities based on the analysis by AI/ML algorithms of the collected data.
- A distributed FMIS that integrates all collected data, supports data exchange and communication between farmers and the fruit canning business and integrates the predictions with the MRP process.



EXPECTED SOCIAL IMPACT

Increasing the profitability will generate higher sustainable income for farmers and more stable jobs in the factories. This will lead to more social security, improved living standards. In developing countries, it will also lead to better education and better healthcare. Cooperation among farmers will be fostered.

Keywords

- Harvest and Yield prediction
- Canning Peach
- EO data
- Spatial Analysis
- Geodatabase
- Machine Learning
- IoT

Duration

01/02/2021 - 31/07/2023

TRL

Technology Readiness
Level 3 - 7

Consortium

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