

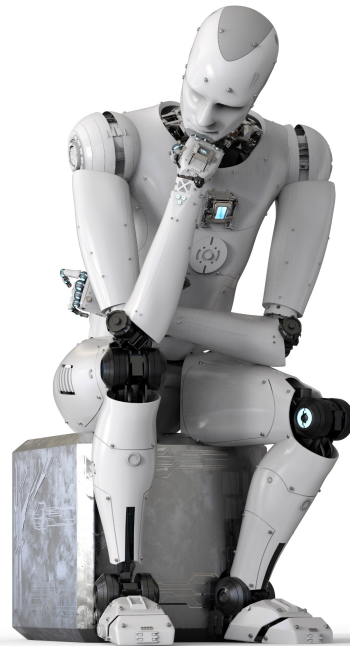


# AI Smart Forecasting for Fresh Produce

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## Agenda

- Intro
- Practical Examples
- Learning from Experience
- If you take one thing from this...
- Summary

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# Intro

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## Benefits of using technology in fresh produce

- Improve productivity
- Increase margins
- Reduce waste

A.I. is just another type of technology. Like the adoption of electricity 100 years ago, using A.I. requires some adaptations.

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## Scope

“Narrow” A.I. (supervised learning with well-delimited objectives)

- Classifiers
  - Labelling, sorting, translations, anomaly detection, pest prediction
- Regressors
  - Forecast yield, sales, price, man-hours, quality

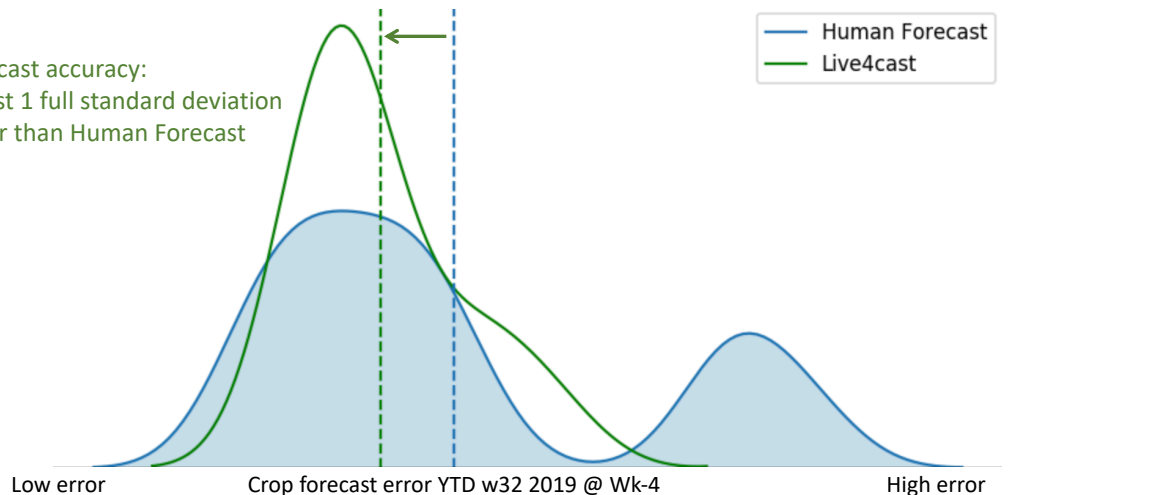
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## Practical Examples

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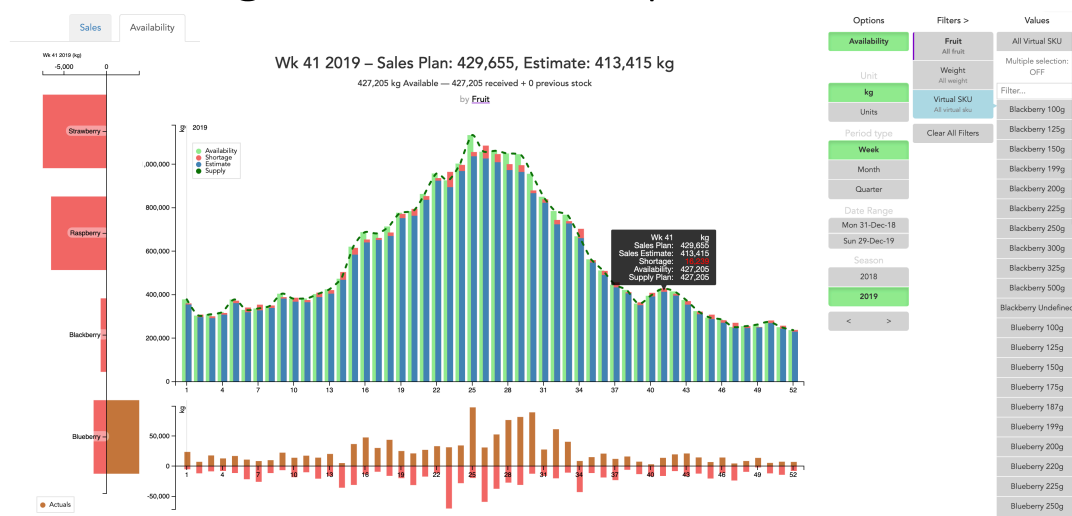
# What if all your forecasts were as good as your best forecasts?

Live4cast accuracy:  
almost 1 full standard deviation  
better than Human Forecast


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# Matching sales and production forecasts for shortage and overstock predictions


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## Doing this quickly at scale requires efficient data handling

- Between 50 – 840 automatic data pipelines per customer each week
- Largest customer has 33 data source classes and 26,467 “translations”
- Live integrations with ERP solutions, picking software, sensor data
- User interactions through web, email, Excel and PowerPoint files

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## Learning from Experience

What to avoid

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## Manual data cleaning

- Example
  - “Let me just sanitize the data before sending it to you”
- Why it is an issue:
  - Training, test and live data should come from the same distribution. Relying on someone manually altering data increases the risk of delays (e.g. if he or she is on holiday) and mistakes (e.g. copy-pasting values one row too low in Excel). The data cleaning process needs to be reproducible.
- What do to about it:
  - Leave the data untouched, let your tech provider automate the cleaning.

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## “Oh, and also...”

- Example:
  - Q: “Can you forecast the daily orders we will get 2 weeks forward”
  - A: “Here is the model, the error is half that of the human forecast”
  - Q: “Before we begin, can this model prepare our business plan for next year”
- Why it is an issue:
  - For the customer it’s very tempting to add objectives, and for the supplier it’s difficult to say no. But that dilutes the resource and reduces probability of success.
- What do to about it:
  - Keep the brief sharp.

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## Technology, not Magic

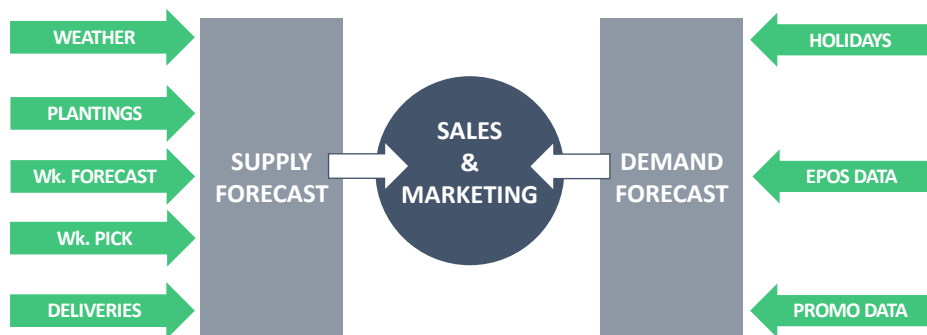
- Example
  - “Did you predict the heatwave?”
- Why it is an issue
  - If you expect 100% accuracy and an answer to all questions, technology is not the answer. Getting benefits will take time, and there will be errors.
- What to do about it
  - Assign an internal project leader to work with your suppliers. Keep timelines and expectations realistic. If your supplier tells you anything is possible, challenge them.

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If you take one thing from this...

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## Data pipelines

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## GIGO

- All AI applications, and all forecasting applications (AI or traditional) are “Garbage In, Garbage Out”
- In order to realize their utility, these applications must be fed correct data, with the right tempo and at the right scale.
- To do this in an economic way requires efficient data pipelines built for your specific business processes

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Data pipelines are to AI  
what cables are to electricity

## Summary

+ where to start

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## Summary

- A.I. is the new electricity. Like any new technology, using it requires some adaptation. It is an enabler, not an objective in itself.
- It is also a young technology. Keep the project brief sharp and agree with your supplier realistic expectations.
- Success depends on having robust, efficient and economical data pipelines built for your business processes.

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## Where to start

- Crop forecast
  - Tools to improve human forecast
  - Long-term machine forecast
  - Short-term machine forecast
- Sales forecast
  - Off-shelf sales forecast: portfolio, pricing, promotions
  - Replenishment forecast
  - Human adjustment
- Translations
  - Integrate diverse data sources into a single source of truth

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