



HEI-TRAIN. HEI Transformation for  
Entrepreneurship and AI-Driven Innovation



Funded by the European Union –  
NextGenerationEU



# AI and VR in the Sustainable Food Industry

Darya Legeza





HEI-TRAIN. HEI Transformation for  
Entrepreneurship and AI-Driven Innovation



Funded by the European Union –  
NextGenerationEU



# ZOOM POLL

Have you ever used the  
principles of food  
**management system**  
in your family?





# Key SDGs that matter for food industry



SDG 2. Zero Hunger



SDG 6. Clean water and  
sanitation



SDG 10. Reduced  
inequalities



SDG 12. Responsible  
consumption and production



SDG 14. Life below  
water



SDG 15. Life on land

 SUSTAINABLE  
DEVELOPMENT GOALS



<https://www.fao.org/sdg-progress-report/ru/>

# Food trends and AI

- AI-Driven Personalized Nutrition
- Smart Food Manufacturing & Predictive Maintenance
- AI in Food Safety & Quality Control
- Sustainable Sourcing and Waste Reduction
- Flavor Innovation Using Generative AI
- Demand Forecasting & Supply Chain Optimization

*Smart Foods: How AI is Crafting the Future of the Food Industry*

*The Latest AI Trends Transforming The Food Industry*





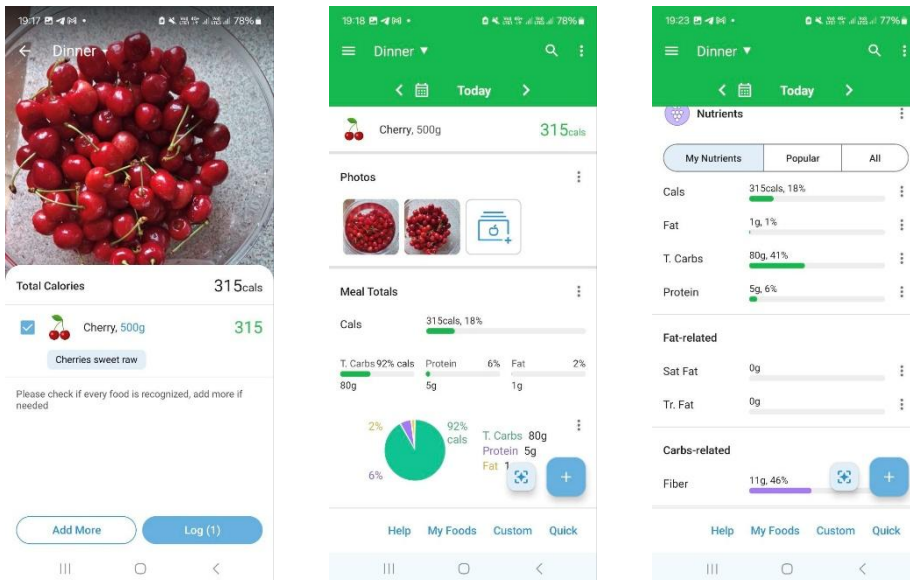


# AI-Driven Personalized Nutrition

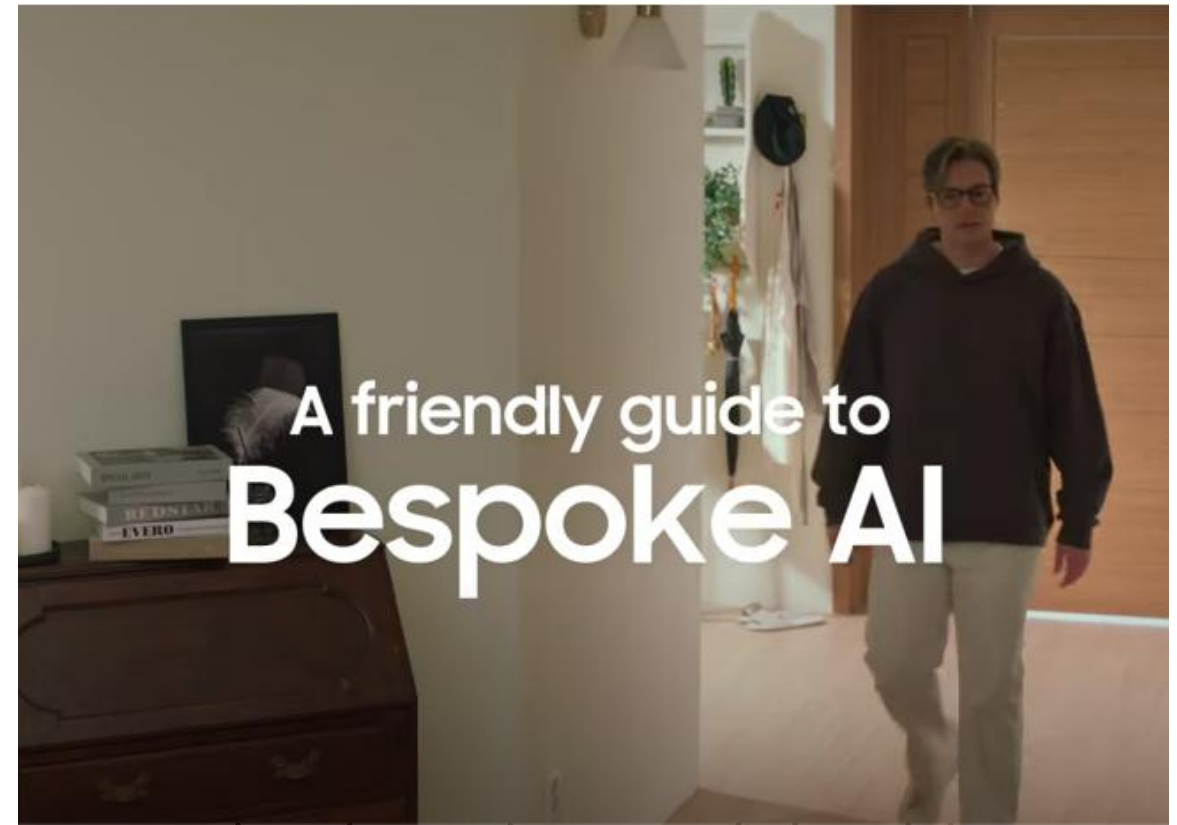
- [\*Nutrigenomix\*](#) analyzes genetic data to recommend foods tailored to an individual's health risks, metabolism, and nutrient needs.
- [\*ZOE\*](#) uses microbiome and blood sugar data to suggest optimal meals, helping users avoid inflammation, energy crashes, or weight gain.
- [\*Tastewise\*](#) scans social media, recipe sites, and restaurant menus to predict emerging preferences - allowing brands to design new functional snacks or beverages for niche health goals like sleep, immunity, or gut support.
- [\*MyNetDiary\*](#) provides app-based analysis of metabolic activity, enabling people without a dietitian to get personalized food guidance daily.

# MyNetDiary

1. Intelligent Food Logging and Analysis
2. Personalized Goal Tracking
3. Nutritional Feedback and Meal Suggestions
4. Predictive Progress Modeling



# BeSpoke AI



[https://www.youtube.com/watch?v=ENzccyfvjOw&ab\\_channel=Samsung](https://www.youtube.com/watch?v=ENzccyfvjOw&ab_channel=Samsung)

# Smart Food Manufacturing & Predictive Maintenance

- GE Digital's Predix and Siemens MindSphere track equipment performance continuously, detecting anomalies before they become failures.
- IBM Maximo uses machine learning to analyze sensor data and schedule maintenance exactly when needed.
- TOMRA inspects and sorts food items faster and more accurately than human workers.
- Seeq and Uptake provide data analytics to optimize energy consumption and reduce spoilage, supporting companies' SDG commitments.
- Rockwell Automation's FactoryTalk can switch recipes or packaging settings on the fly, enabling agile manufacturing.



[https://www.youtube.com/watch?v=a0EW60F7OR4&ab\\_channel=TOMRA](https://www.youtube.com/watch?v=a0EW60F7OR4&ab_channel=TOMRA)





# Sustainable Sourcing and Waste Reduction

Provenance and IBM Food Trust use blockchain and AI to verify sustainability credentials, such as fair trade or regenerative farming, down to the farm level.

Afresh uses AI to predict demand for fresh produce in grocery stores, reducing spoilage by up to 25% and improving inventory decisions.

Wasteless uses machine learning to adjust prices in real time based on expiration dates, encouraging timely purchase and reducing landfill contributions.

Too Good To Go's (B2B marketplace in the UK) analyzes usage trends and suggest adjustments to package contents or bundle sizes for better sustainability and customer satisfaction.

Climax Foods AI can reformulate cheese, meat, and other products using climate-smart ingredients, reducing water usage, land footprint, and carbon emissions.





**FoodFlow** is a web application designed to monitor food waste and provide sales predictions using AI. The application is built with a **React** frontend (using Vite) and a **Flask** backend. It helps businesses manage food inventory more efficiently by predicting sales and minimizing waste.

FoodFlow

HomeDaily EntrySales Prediction

### Sales and Customers Prediction

Apparent Temperature

32

Humidity

5

Precipitation Intensity Max

43

Precipitation Max Time

23

Submit

₹

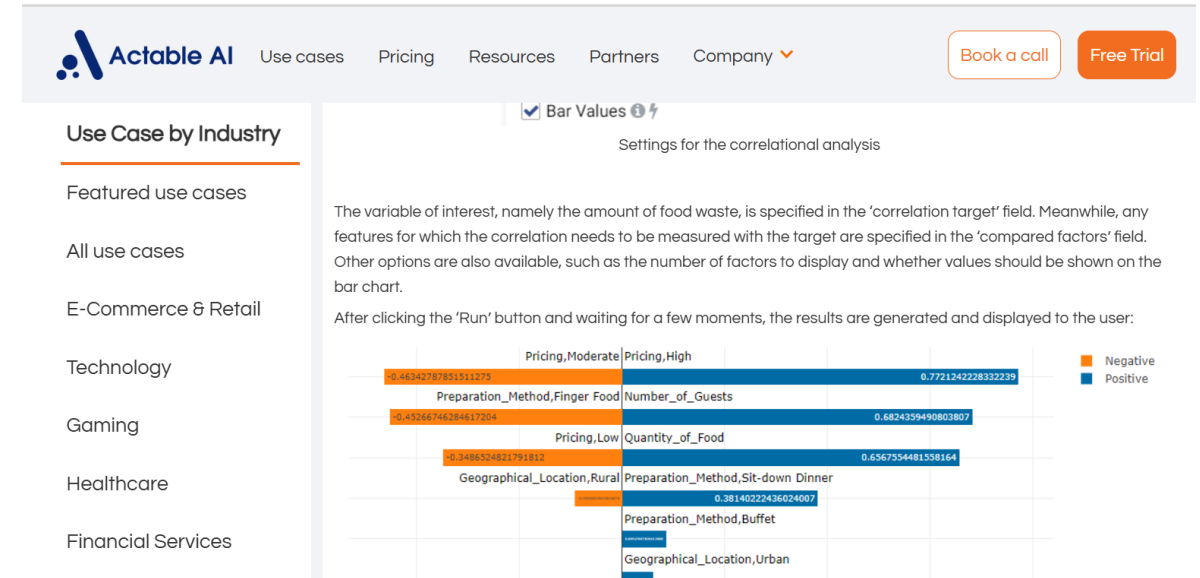
Revenue Generation Prediction

14252.89

Customer Prediction

175

<https://github.com/Thilages/FoodFlow?tab=readme-ov-file>



[https://www.actable.ai/use-cases/predict-food-wastage?utm\\_source=chatgpt.com](https://www.actable.ai/use-cases/predict-food-wastage?utm_source=chatgpt.com)



HEI-TRAIN. HEI Transformation for  
Entrepreneurship and AI-Driven Innovation



Funded by the European Union –  
NextGenerationEU



**Tracks groceries with voice  
input, monitors expiration  
dates, and generates recipes  
based on what you have**

**Free tier allows up to 5 AI  
actions; full voice and recipe  
features with no-login  
access**



## FridgeGuide Ai

Track Your Groceries  
Create New Recipes  
Save Time & Money



*FridgeGuide Ai* is an app that manages your fridge & pantry items by showing the expiration dates in real-time. From there, the app provides **AI-generated** recipes that can be made with the groceries you have in stock.

No more guesswork if your food is **fresh vs spoiled**. And, no more endless searching for the right recipe that fits your ingredients. You provide your groceries, let us guide you on the rest.



# AI in Food Safety & Quality Control

Intello Labs uses computer vision and machine learning to assess the quality of fruits, vegetables, and grains in real time, minimizing human error.

HACCP-based smart sensors such as AgShift can detect hygiene issues, improper temperatures, or cross-contamination before they affect final products.

Teachable Machine by Google allows you to build custom AI models for visual food quality control without coding.

Clear Labs analyze DNA-level food samples using AI to identify contamination risks (e.g., salmonella or E. coli) before products reach shelves.

QualySense uses AI to grade individual seeds or legumes for quality, making mass inspection faster, more detailed, and scalable.







HEI-TRAIN. HEI Transformation for  
Entrepreneurship and AI-Driven Innovation



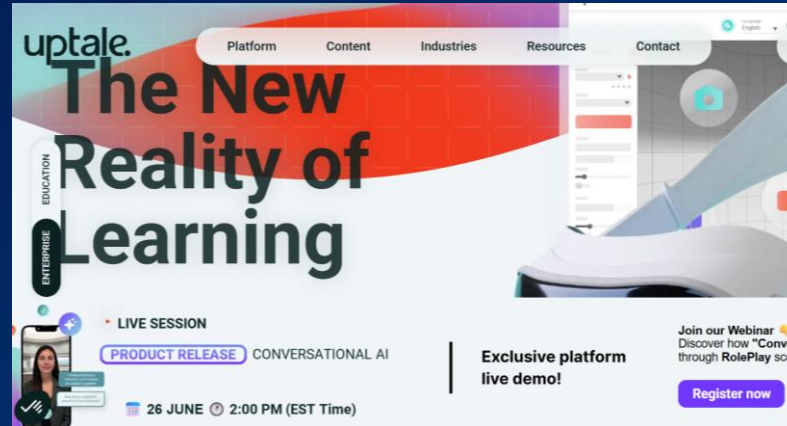
Funded by the European Union –  
NextGenerationEU



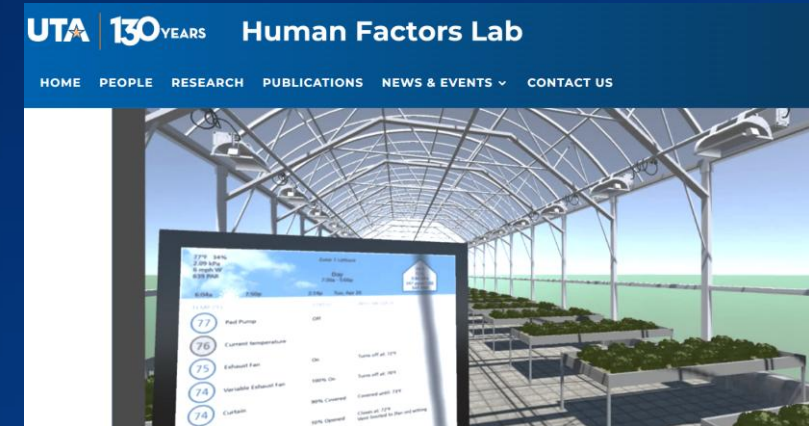
# VR technologies



Offers VR modules for training on  
plant operations, food safety  
protocols, and hazard recognition for  
Canadian food-processing workers



VR safety training at Nescafé's Girona  
plant immerses employees in hygiene  
best practices and forklift safety  
scenarios to reduce accidents and  
ensure compliance



VR allows users to visualize and  
manipulate irrigation, ventilation,  
heating, and nutrient systems in real  
time through virtual dashboards and  
interfaces



# Flavor Innovation Using Generative AI

NotCo's Giuseppe uses neural networks trained on thousands of plant ingredients to generate new formulations that mimic traditional foods or invent new taste profiles entirely.

JourneyAI by Gastrograph predicts consumer flavor preferences across demographics, allowing brands to test virtual flavor concepts before producing physical prototypes.

Spoonshot scans vast data sources from scientific papers to food blogs and suggests novel pairings (e.g., cherry + miso + cold brew).

Ai Palette uses AI to reformulate existing flavors with clean-label ingredients, reducing sugar or salt while preserving consumer appeal.

Toolable.ai's Flavor Combination Explorer generate unexpected yet harmonious pairings based on culinary science and global traditions

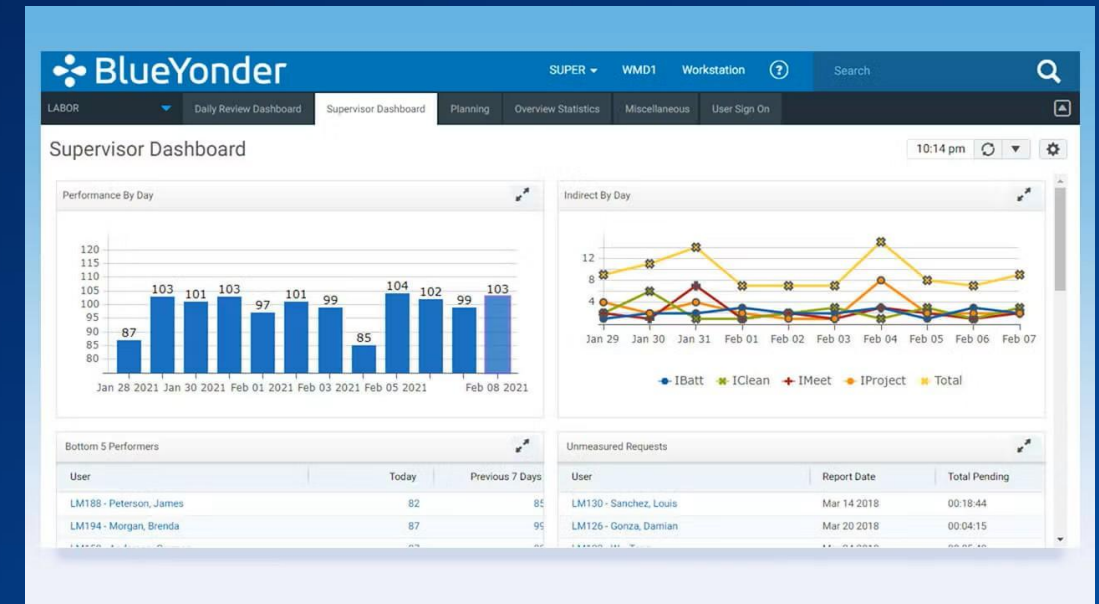
# Demand Forecasting & Supply Chain Optimization

Blue Yonder (formerly JDA) uses machine learning to analyze historical sales, weather patterns, and promotional events to predict food demand with exceptional accuracy.

o9 Solutions provides an AI platform that integrates real-time data from sales, logistics, and market signals to make agile, data-backed decisions on sourcing and distribution.

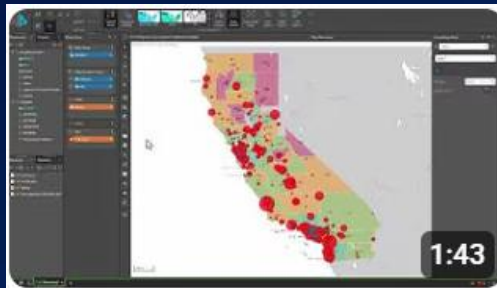
Llamasoft (now part of Coupa) simulates supply chain scenarios to select the most sustainable and efficient transportation routes and supplier choices.

Forecastly (for Amazon sellers) or Inventory Planner predicts reorder needs and streamlines stock levels, freeing up cash flow and reducing manual errors.





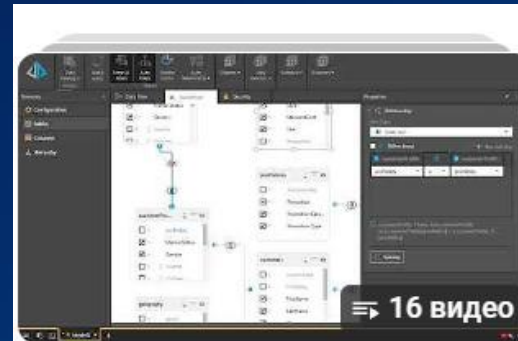
# Pyramid Analytic



Pyramid 2025 Newton  
release - Layered Maps



Pyramid 2025 Newton  
release - Lasso for Maps



Model Tutorials



Discover Tutorials

<https://www.youtube.com/@PyramidAnalytics>

<https://www.pyramidanalytics.com/>



HEI-TRAIN. HEI Transformation for  
Entrepreneurship and AI-Driven Innovation



Funded by the European Union –  
NextGenerationEU



# Questions?

[darya.legeza@tsatu.edu.ua](mailto:darya.legeza@tsatu.edu.ua)



Funded by the  
European Union

**EIT Higher Education Initiative**