

Artificial Intelligence for **Intelligent Food Manufacturing:**

From Data to Smart Decision-Making



Why this workshop

Artificial intelligence (AI) is rapidly becoming a strategic capability for the food and drink industry. Recent industry evidence shows that nearly half of food manufacturers already use AI in their operations or forecasting, while almost three-quarters plan to invest in AI over the next one to three years. AI is increasingly recognised as a means of improving decision-making, productivity, sustainability and business competitiveness.

However, successful AI adoption depends on more than machine learning algorithms. Many organisations continue to face challenges relating to data quality, legacy systems, workforce skills and translating process data into actionable insights. The greatest value of AI lies in combining engineering knowledge, high-quality measurement systems and process understanding with intelligent data analytics to support better operational decisions.

This workshop provides an up-to-date introduction to AI for food manufacturing, covering intelligent sensing, machine vision, soft sensors, digital twins, advanced process control and intelligent manufacturing. Through industrial examples and recent research case studies, participants will learn how AI is improving food quality, efficiency, sustainability and resilience, while exploring future developments such as Scientific Machine Learning, reasoning AI and autonomous laboratories.

Learning outcomes

By the end of the workshop participants will be able to:

1. Understand the role of AI in modern food and drink manufacturing.
2. Explain how AI complements engineering principles for intelligent sensing, modelling and process control.
3. Evaluate key AI technologies including machine vision, soft sensors, digital twins and predictive analytics.
4. Recognise the practical challenges of AI adoption, including data quality, workforce capability and organisational readiness.
5. Discuss emerging trends including Scientific Machine Learning, foundation models and autonomous food manufacturing.

Target audience

Academic researchers and postgraduate students interested in AI and digital food manufacturing.

Food and drink industry professionals, including engineers, technical managers, innovation teams and decision-makers.

Anyone interested in understanding how AI is transforming modern food manufacturing, regardless of previous AI experience.

Prerequisites

No prior knowledge of artificial intelligence or machine learning is required. A general interest in food engineering, manufacturing or digital technologies is sufficient.

Workshop format

The workshop will be an in-person, 90-minutes session featuring expert speakers and interactive discussions:

1. AI and Food Manufacturing: Opportunities and Challenges (20 minutes):

Speaker: Professor Nik Watson, Professor of Artificial Intelligence in Food, University of Leeds, UK.

An overview of the current state of AI adoption in food manufacturing, highlighting the opportunities, implementation challenges, trust, governance and future directions for AI across the food sector.

2. AI for Intelligent Measurement, Control and Manufacturing (20 minutes):

Speaker: Professor Hongwei Zhang, Professor of Intelligent Manufacturing, Fuyao University of Science and Technology, China, and former Academic Director of the Advanced Food Innovation Centre, Sheffield Hallam University, UK

An overview of recent advances in AI-enabled food engineering, including intelligent sensing, machine vision, soft sensors, digital twins and AI-assisted process control. Recent research case studies will demonstrate how AI can improve food quality, process efficiency and sustainability.

3. Case Studies: AI in Practice (20 minutes):

Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia

A selection of industrial case studies demonstrating practical AI applications in food manufacturing.

4. Round-table Discussion and Q&A (30 minutes):

An interactive discussion with all speakers exploring the opportunities, challenges and future of AI in food manufacturing, including responsible AI, workforce skills, industrial implementation and opportunities for future collaboration.

Instructors

Primary instructor: Dr Hongwei Zhang, Professor of Intelligent Manufacturing, Fuyao University of Science and Technology, China

Additional instructor/facilitator: Dr Nik Watson, Professor of Artificial Intelligence in Food, University of Leeds, UK

Costs

See website.

Questions

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