

Agriculture, AI and Robotics

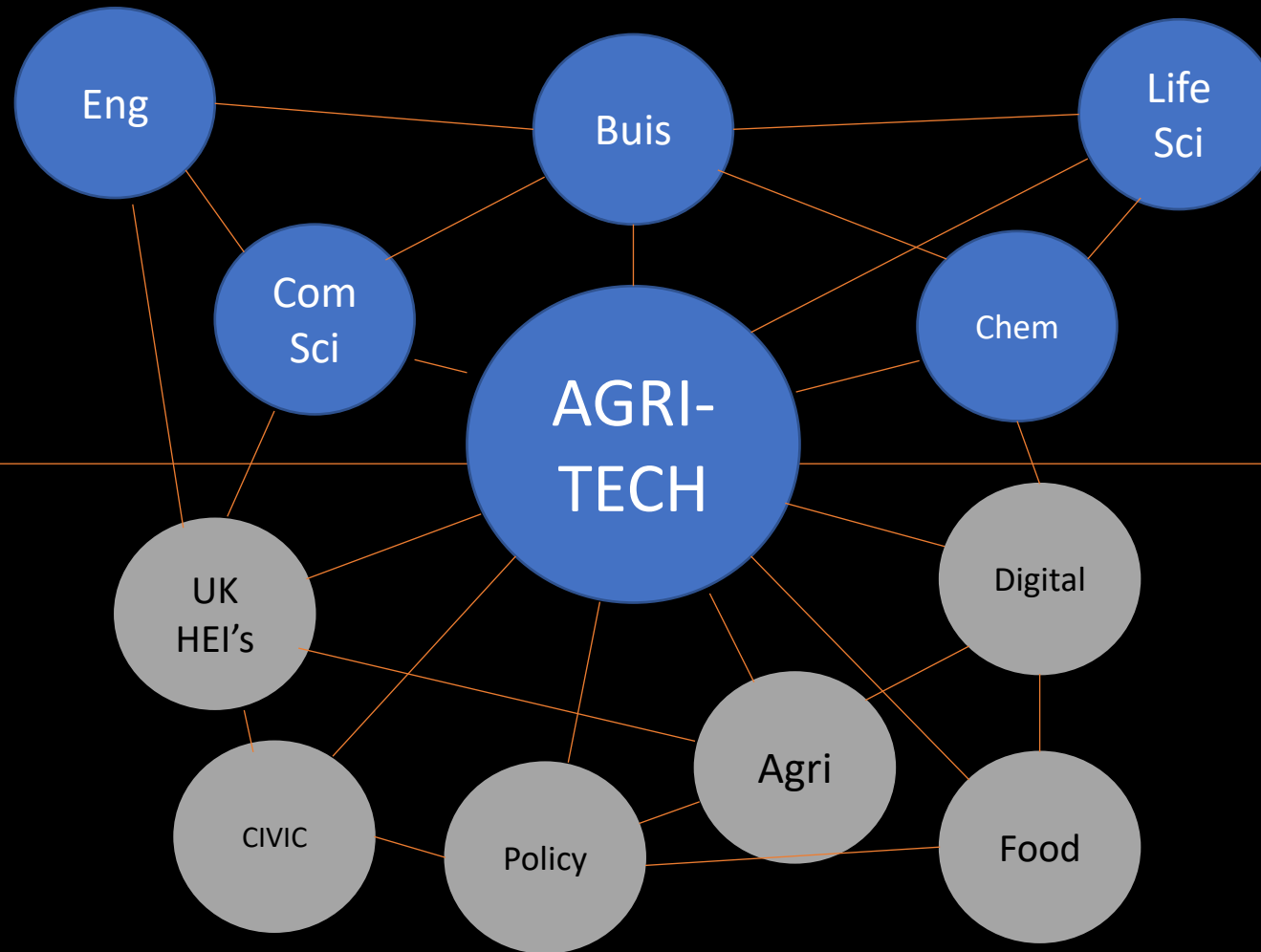
Professor Simon Pearson

Director, Lincoln Institute of Agri-Food Technology

The University of Lincoln

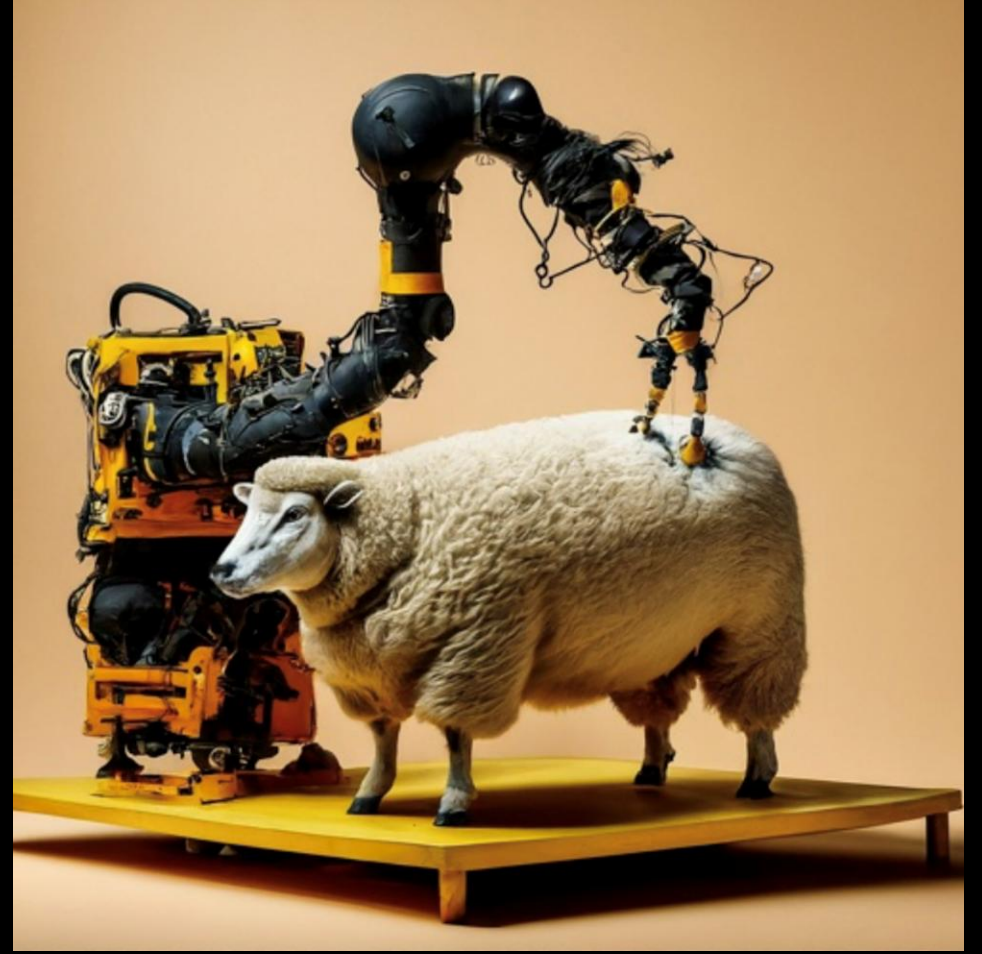
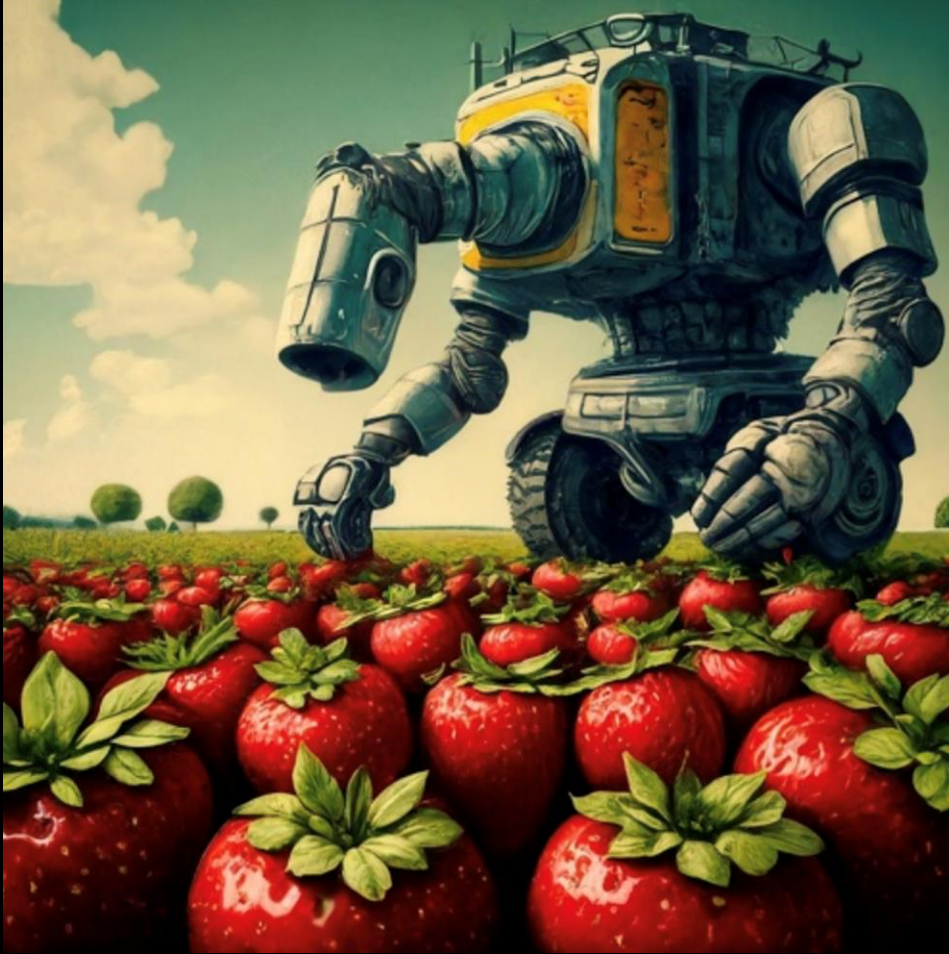


UNIVERSITY OF
LINCOLN



Agri-food technology is interdisciplinary

AI: Dystopian or utopian agriculture?



The world
is changing and
fast...where can
robotics and AI
help?



Translating world leading-academic science to commercial agri-tech

Academic
research



Industry

Ceres provides specialist translation funding (pre-seed) & expertise to UK universities/ RTO

High quality interactions & speed focussed on F2F, 1:1

Translational funding

No obligation to work with Ceres

Collaborative, Ceres funded, industry quality, agri-tech development project

Project designed and executed by academic PI and dedicated Ceres Team

IP; licensing & commercialisation, including spin out creation and seed funding.

Specialist knowledge of UK science base and commercial opportunities

Confidential and first access to breakthrough innovation

Engagement and real contribution

Leverages industry expertise, experience and resources

Progress made with Tier 1 corporates and Venture

Projects 1. Reduce Environmental Impact of Agriculture



Nitrate runoff capture

Sustainable pollution reduction



Direct Air Capture

Sustainable CO₂ sources for optimal production



Variable rate fertiliser application

Giving crops only what they need



Novel pesticide removal

Using chemistry to clean up agriculture



Seaweed-based production of biochemicals

A greener supply chain



Biocomposites for greener transport

Driving down transport footprints



Biocomposites for horticulture

Green chemistry for sustainable solutions



Bio-based batteries

Energy storage from waste



Biopackaging

Using biowaste to reduce waste



Upcycling distillers grain

Creating value from waste

Examples of projects funded

2. Prevent crop loss and waste



Automated lettuce harvesting

Getting to grips with a complex task



In-field pathogen detection

Smart disease scouting



Strawberry decision support

Using data to fight crop disease



Autonomous black-grass detection

Spotting every weed



Low-cost robotic platform

Driving down the cost of robots



Novel pest strategies

Maintaining fruit quality



New sensor technology for potato stores

Keeping an eye on potatoes



Robotic fruit picking

Picking our way out of the labour crisis



Broccoli crop forecasting

Knowing when it's time to harvest



Food quality control

Detecting insects



Potato grading

Using AI to grade out defects



Strawberry yield forecasting

Knowing when to pick



Mushroom picking robot

Sustainable intensification



Improving labour efficiency

Picking the whole crop



Reliable robot navigation

Helping robots find their way



Agriculture 5.0: Unleashing AI

Using 5G to unlock AI on UK farms

3. Provide Next Generation Healthy Crops



Resilient cereals

Non-GM crops for the 21st century



Disease-resistant bananas

Leading the race to save the banana



Next-gen crop spraying

Targeting every drop



Novel polytunnel coverings

Perfecting the growing environment



Novel greenhouse materials

Putting plants in the best light



Fungal bioinoculants

Harnessing mycorrhizal networks



Biostimulant for abiotic stress

Giving plants a boost