

Field Robotic Device: The Amiga

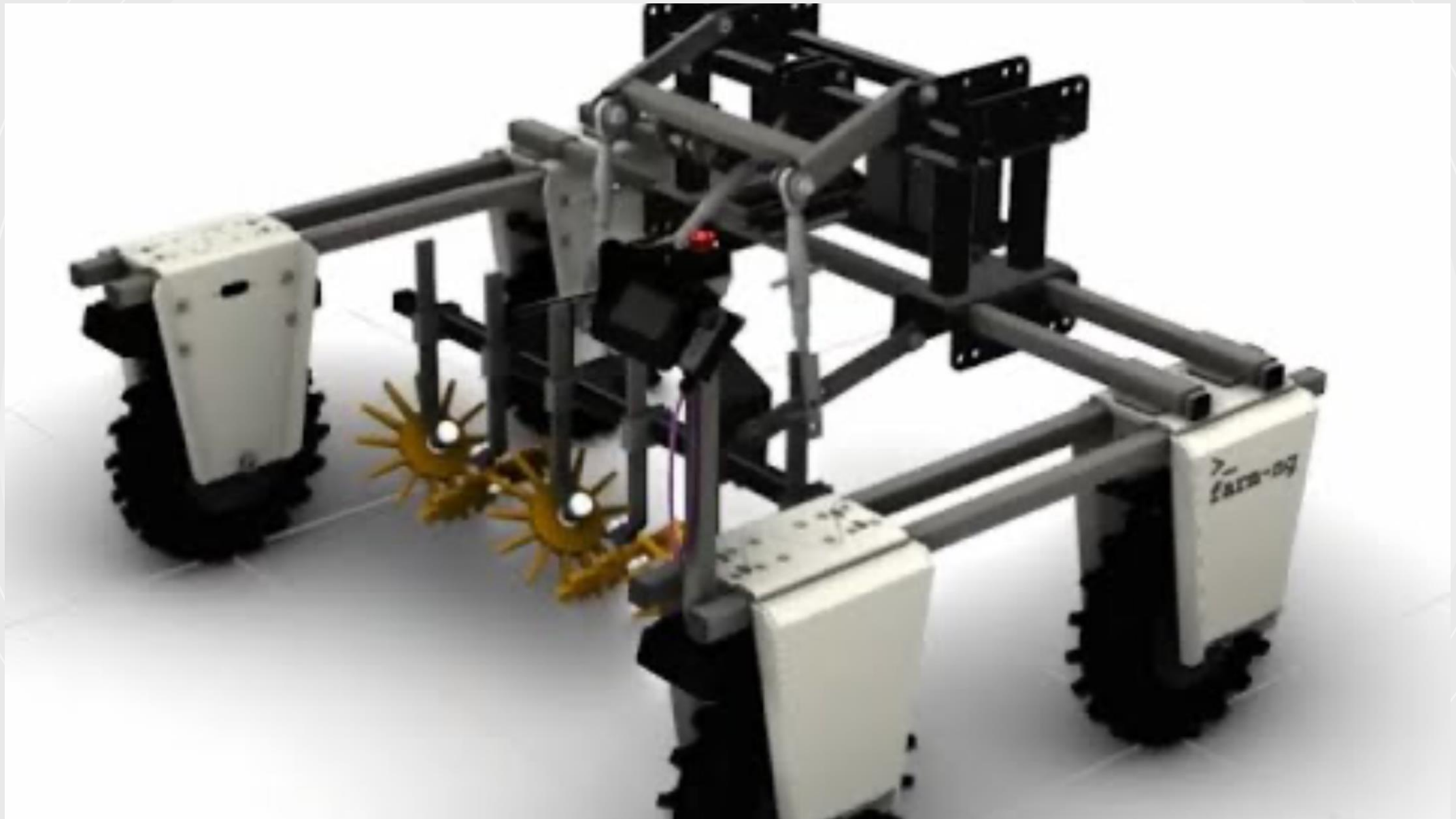


Why Robotics?

Robots are used to make tasks easier, safer, and more efficient.

They can work in conditions that are dangerous for humans, perform repetitive tasks with high precision, and operate continuously without fatigue.

In many industries, robots help increase productivity and quality.



Key Components of Autonomous Operation

1

Sensors: Sensors collect data from the robot's surroundings. Common sensors include cameras, GPS, LiDAR (Light Detection and Ranging), and ultrasonic sensors. These devices help the robot understand its environment by detecting obstacles, measuring distances, and identifying objects.

2

Processing Units: The robot's brain, or processing unit, interprets the data from sensors. It uses complex algorithms and artificial intelligence (AI) to make decisions based on the information it receives.

3

Actuators: Actuators are the robot's muscles, controlling its movements. They enable the robot to move, manipulate objects, and interact with its environment.

4

Software and Algorithms: The software and algorithms are the instructions that tell the robot how to process sensor data, make decisions, and perform tasks. Machine learning and AI play a crucial role in enabling robots to learn from their experiences and improve their performance over time.

Autonomous Operation: Follow Mode

Autonomous operation refers to the ability of robots to perform tasks and make decisions without human intervention.



These robots are equipped with advanced sensors, software, and algorithms that allow them to navigate their environment, identify objects, and carry out specific actions independently.

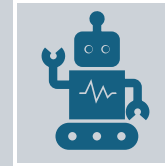
Follow Mode on the Amiga Field Robot



Benefits of Follow Mode



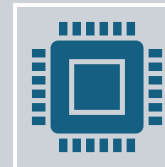
Increased Efficiency: The robot can carry heavy loads, reducing the need for multiple trips and allowing farmers to complete tasks more quickly.



Reduced Physical Strain: By carrying tools and supplies, the robot helps reduce the physical strain on farmers, improving their overall well-being.

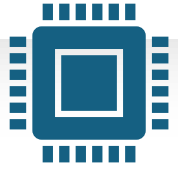


Enhanced Productivity: Farmers can focus more on their tasks without worrying about carrying equipment, leading to increased productivity.



Improved Precision: The robot's ability to navigate and follow accurately ensures it stays close to the farmer without causing disruptions.

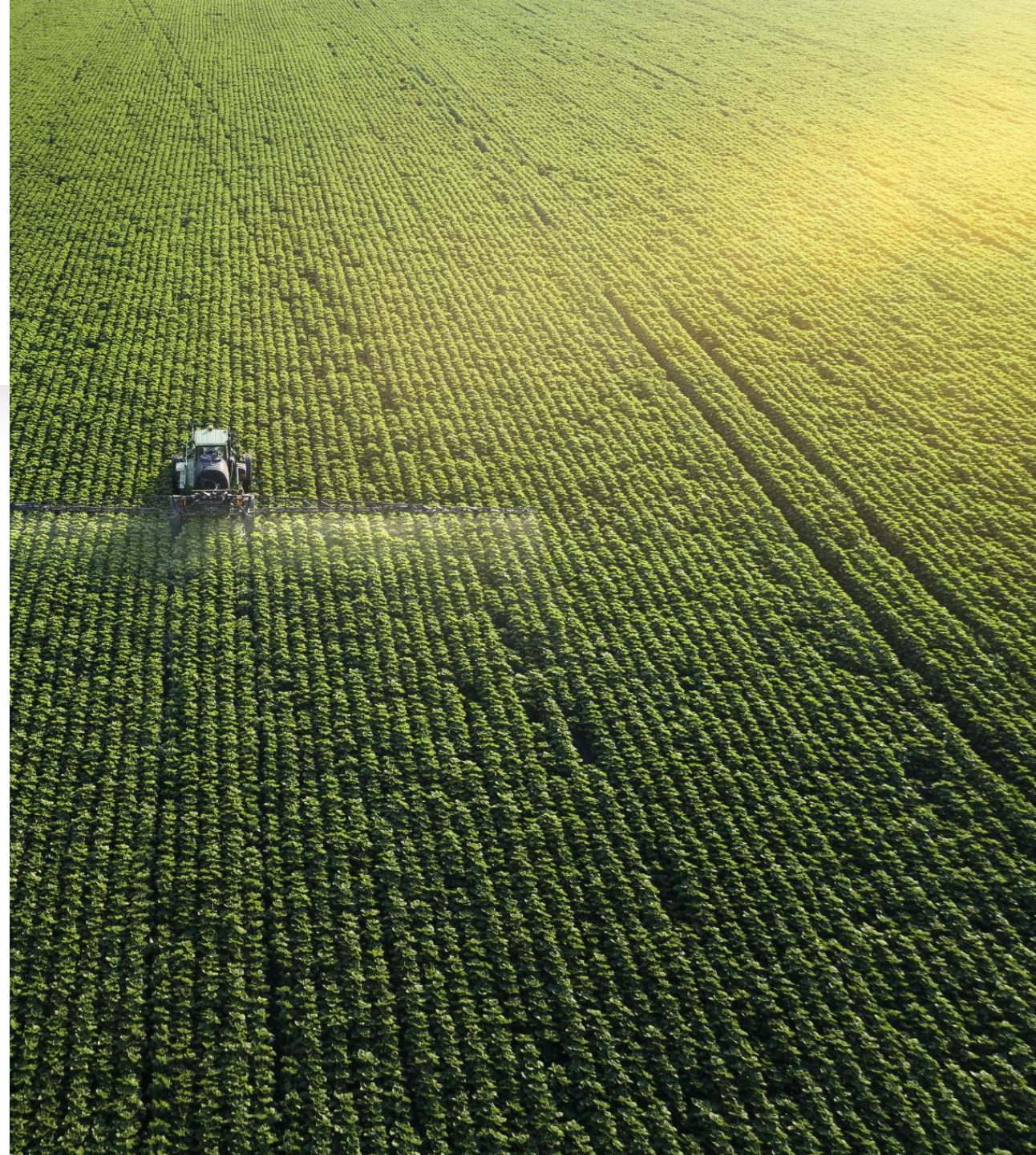
Autonomous Operation: Point A-B Navigation



Point A-B navigation is a feature that allows the Amiga field robot to travel autonomously between two predefined points, Point A and Point B, on a field.



This capability is essential for performing repetitive tasks like planting, watering, or transporting goods with high precision and efficiency.



Logistics of Point A-B Navigation Operations in Agriculture





What is 3-D Vision?

3-D vision, or three-dimensional vision, is the ability to perceive the world in three dimensions: length, width, and depth.

In robotics, 3-D vision allows robots to understand and interpret their surroundings more accurately by creating a three-dimensional representation of the environment.

This is achieved using a combination of cameras, sensors, and software algorithms.



3-D Vision in Agriculture Robotics

What is Automated Spray Technology?



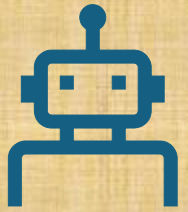
Automated spray technology refers to the use of robots to apply pesticides, herbicides, fertilizers, and other chemicals to crops in a precise and controlled manner.



This technology helps farmers manage their fields more efficiently by targeting specific areas and reducing the amount of chemicals used.

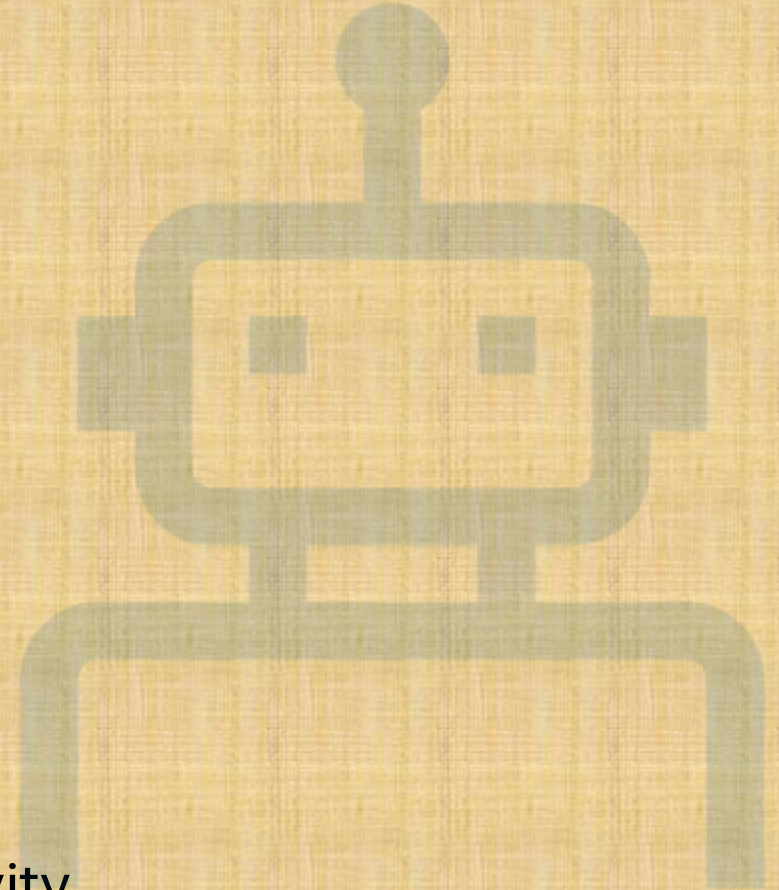
Automated Spray Technology: Design and Installation





Importance of Field Robotics in Shaping the Future

Field robotics plays a crucial role in shaping the future of agriculture and various other industries by introducing advanced technologies that improve efficiency, sustainability, and productivity.



Career & Educational Pathways



Summary of Key Points

Introduction to Robotics in Agriculture

Applications of Field Robots

Technological Features

Automated Spray Technology

Design Considerations

Future of Robotics in Ag

Career Opportunities

Educational Pathways



Q&A Session

