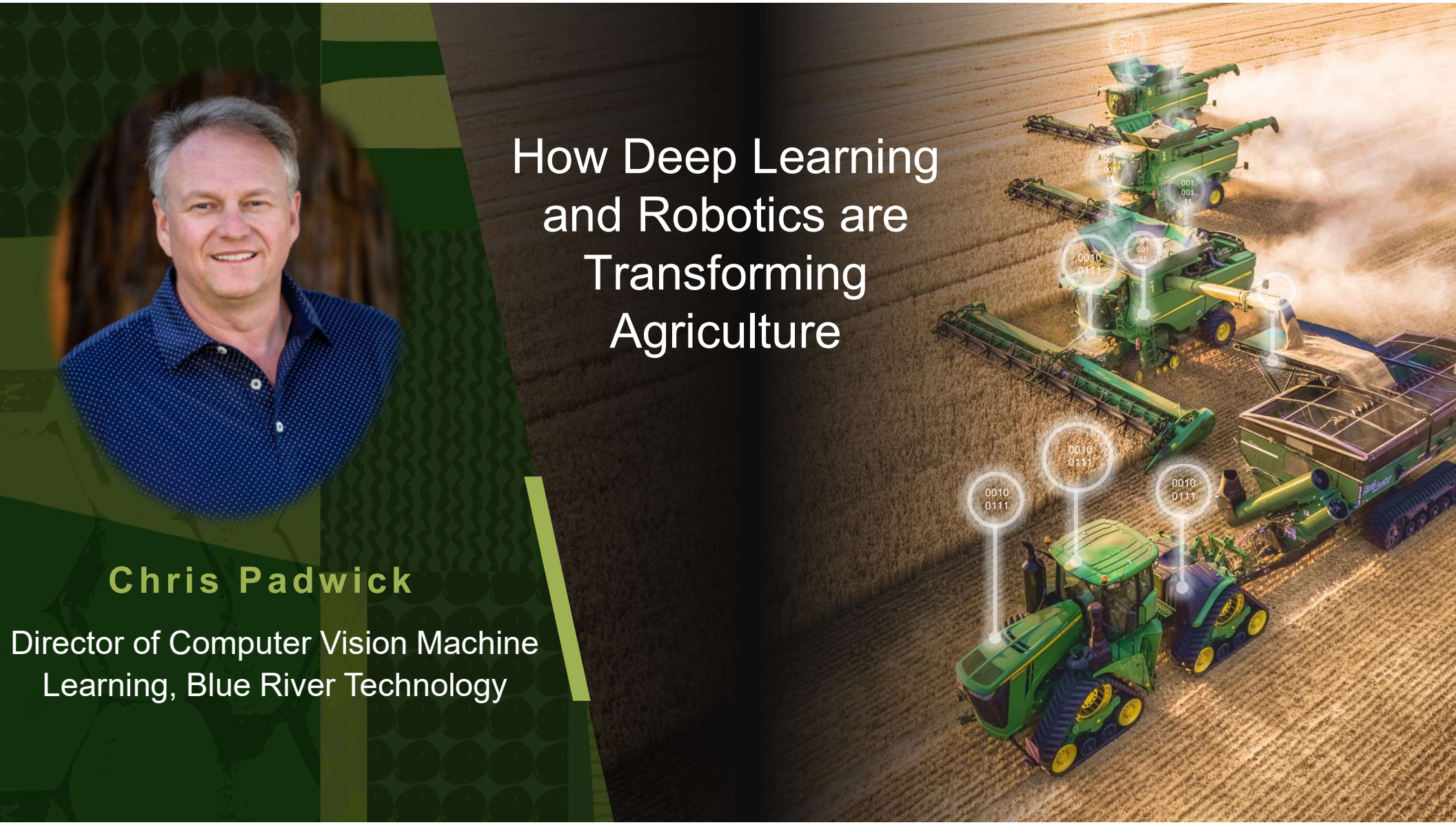

How Deep Learning and Robotics are Transforming Agriculture
Chris Padwick
Director of Computer Vision Machine Learning, Blue River Technology

The Challenges of Agriculture
• Growing population
• Extreme variability
• Labor shortage & aging workforce

Traditional Agriculture

Bigger. Faster. Stronger

Next Frontier of Agriculture

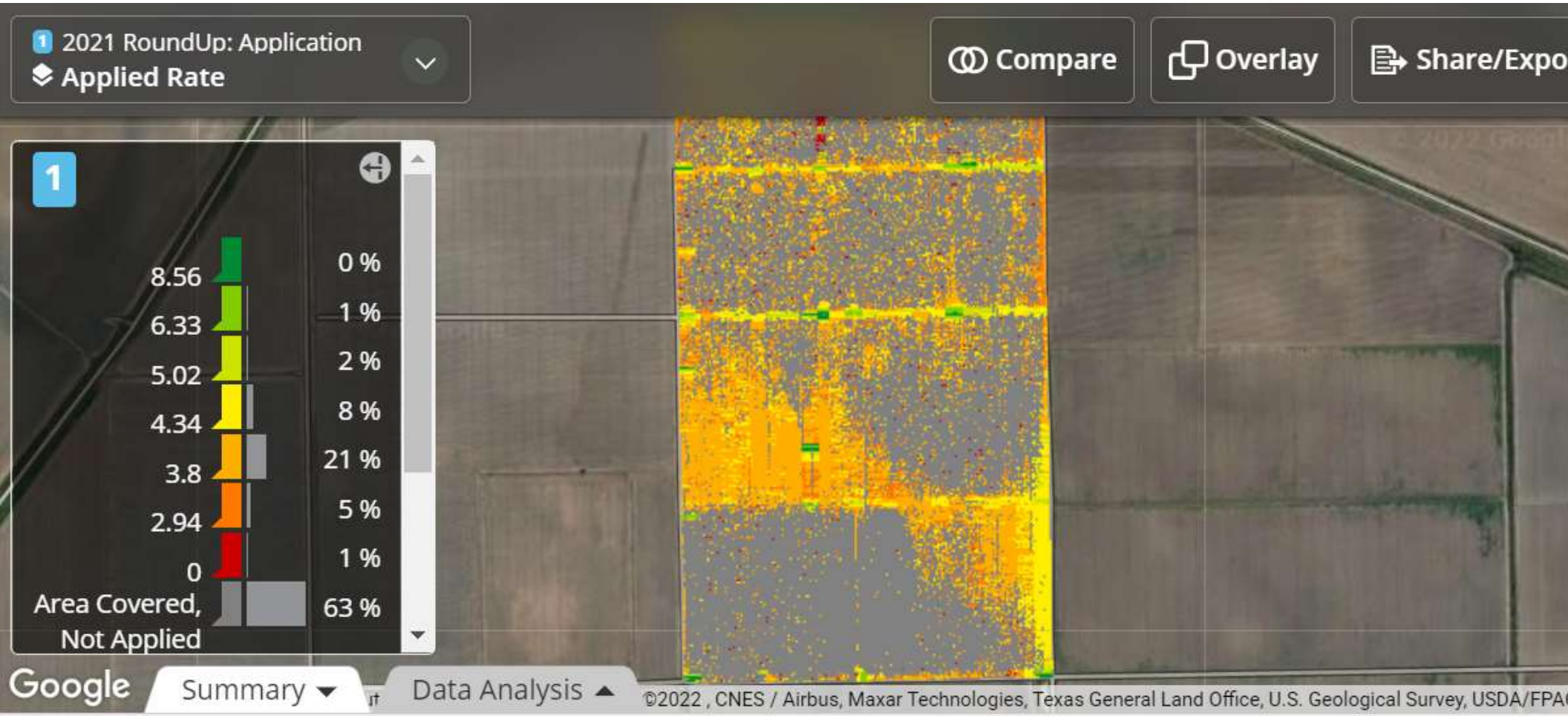
Automated. Easy to Use. More Precise.

More than 600,000 John Deere connected machines traverse **a third of the Earth's land surface**

SEE & SPRAY ™

TECHNOLOGY

Computer Vision | Machine Learning | Edge Computing | Rugged cameras | Robotics



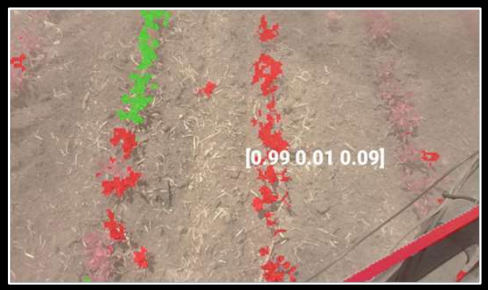
Productivity	129.2 ac/hr
Working Time ⓘ	2 hr 9 mins
Total Fuel	16.2 gal

See & Spray™ Savings

62.8% | 2,632 gal

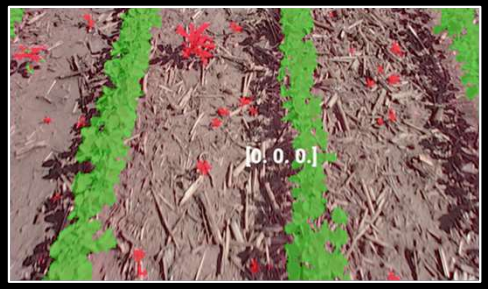
Real-Time Image Quality Predictions

Dust, Fog, Condensation



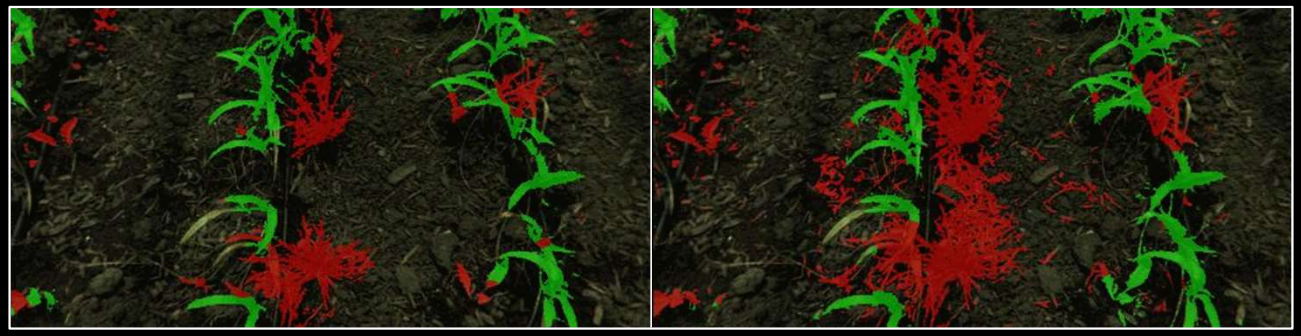
Low Light

Glass, Defocus, Motion Blur



No Augmentation

Fog Augmentation



Key

Weed

Crop

Harvest Compute Cluster

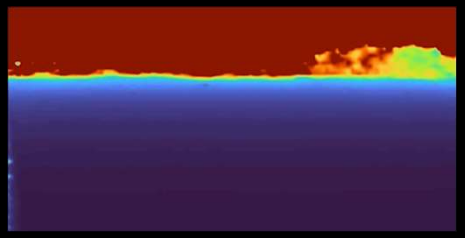
Advantages of on-prem processing

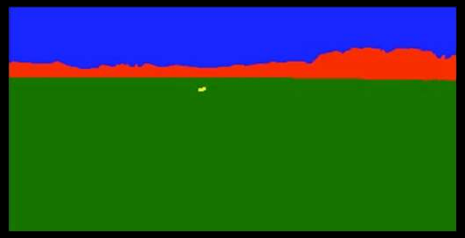
Training Pipeline

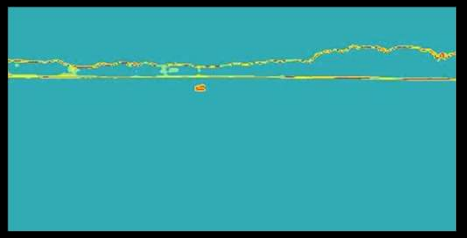
Release and Deployment

JOHN DEERE

What happens when we encounter an ***OBSTACLE***







Deere’s goal is to have a **fully autonomous farming system** for corn and soybeans in the U.S. **by 2030**

The Intersection of Technology *AND* Purpose

Thank you

JOHN DEERE