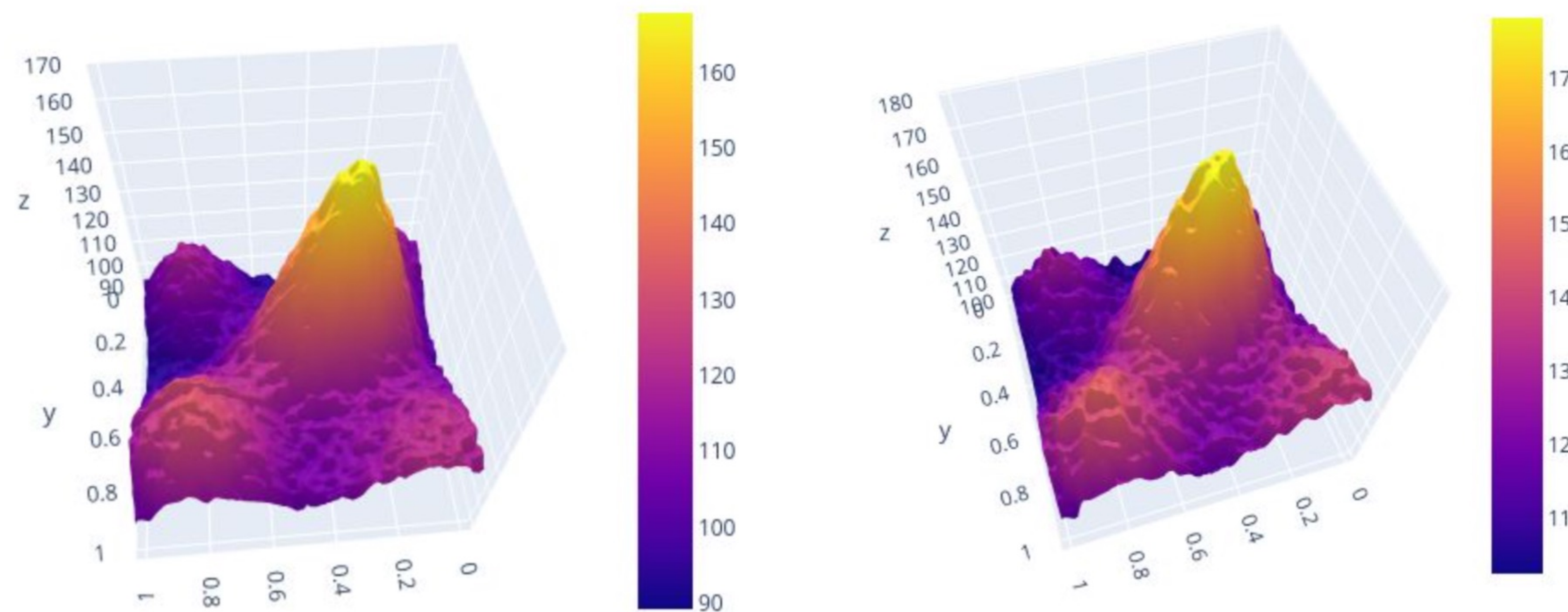# CPS: Medium: Multi-Scale Planning in Robot Teams for Persistent Monitoring and Intervention in Precision Grazing

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Challenge:

- Autonomous monitoring and active intervention in a new paradigm of precision grazing practices.

Solution (Year 2):

- Bayesian LSTM architecture to learn and predict complex forage dynamics.
- Full simulation environment for forage simulation, UAV monitoring, neural network-based prediction, and UAV temporal planning.

LSTM-based Bayesian forage prediction (predicted- left, target - right)
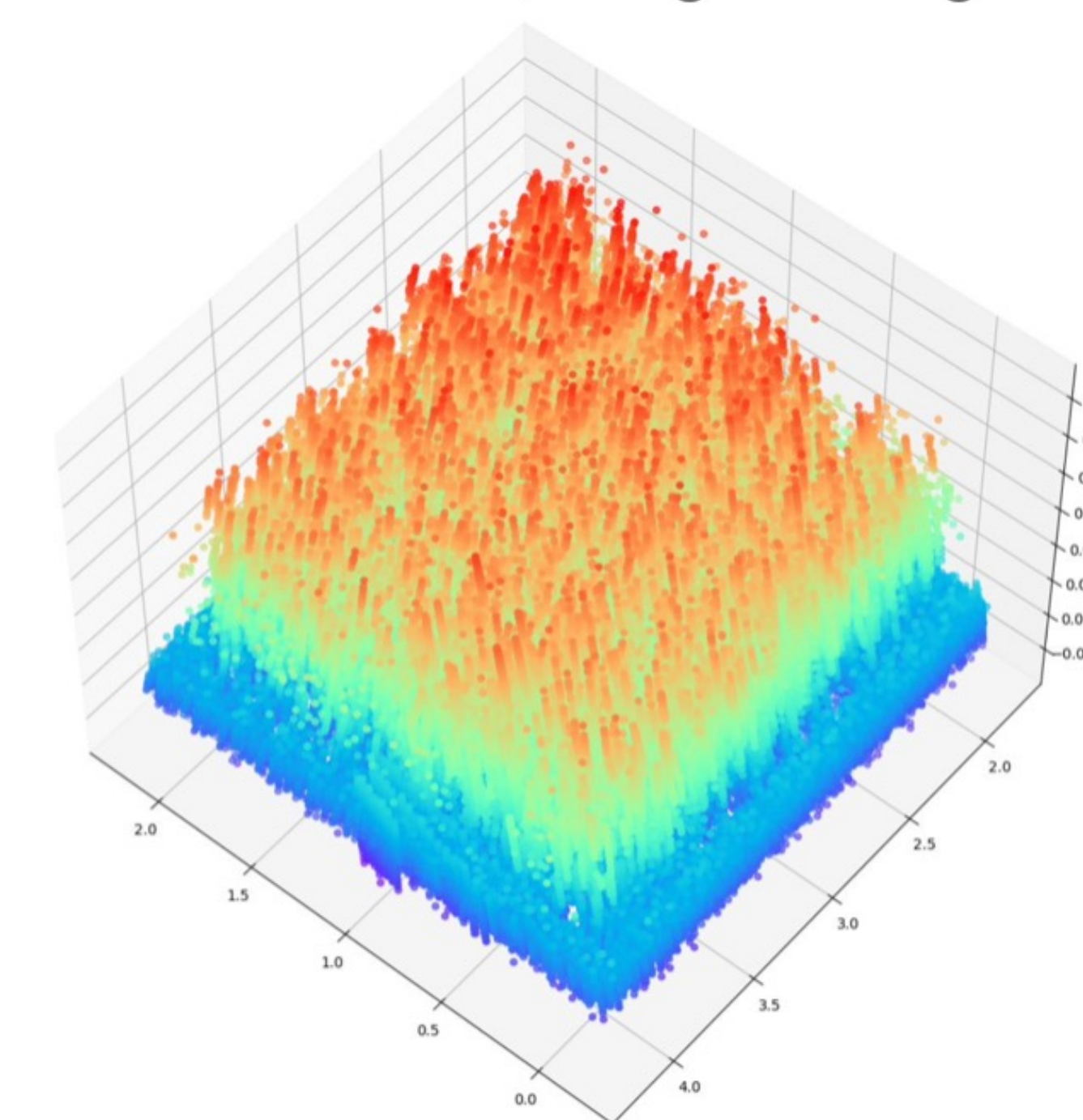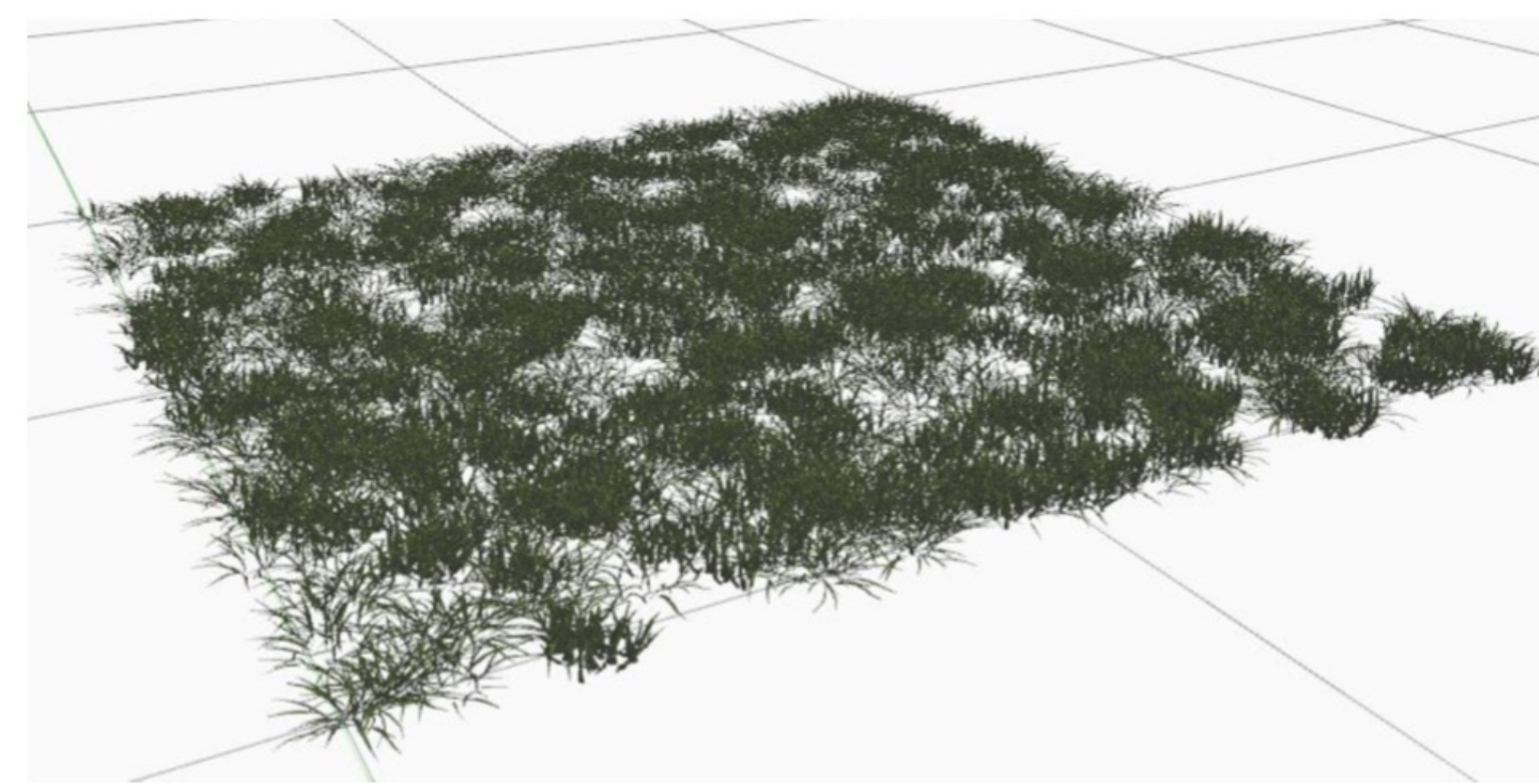
High-fidelity forage simulation (left) and height perception (right).

Scientific Impact:

- Intersection of novel techniques from decision theory, risk-aware path planning, neural networks, combinatorial optimization, and field robotics.

Broader Impact:

- Pasturelands are an integral part of agricultural production in the United States, covering 48 million ha.
- Maximizing pastureland use will improve the profitability and ecological sustainability of livestock farming.