Precision Pollination Robot

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Objective:

Design a pollinator robot and perform proof-of-concept demonstrations of its effectiveness for precision bramble (i.e. blackberry and raspberry) pollination in a greenhouse environment.

Year 2 Progress:

Horticulture: bramble cultivars suitable for robotic pollination experiments were grown. A 5-row trellis system with netting was constructed in the greenhouse.

Entomology: the structure, function, and behavior of bees while interacting with flowers were investigated.

Robot System: several software functions needed for robotic pollination, such as localization, mapping, computer vision for flower recognition, task and motion planning, autonomous driving, obstacle avoidance, and flower manipulation were developed.

Testing: autonomous robot navigation and mapping in the greenhouse with simulated pollination actions.

Next Step: integrate the robot system to complete the entire pollination sequence on real flowers and evaluate the efficacy and efficiency of multiple pollination methods.