# Collaborative Research: NRI: StickBug – an Effective Co-Robot for Precision Pollination

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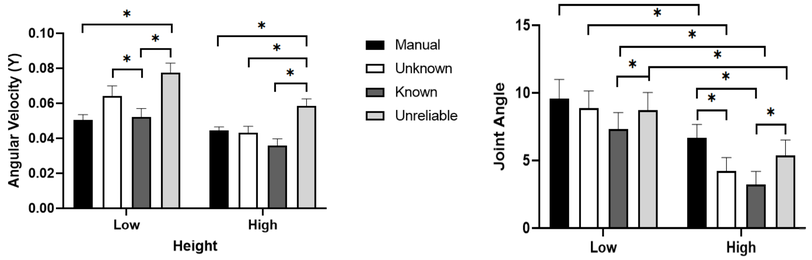
https://yugu.site/2021/10/30/why-are-we-building-precision-pollination-robots/

**Long-Term Goal**: develop robots that can efficiently care for individual plants

**Objectives**: 1) significantly improve the effectiveness and 2) lower the entry barrier of precision robotic pollination technology

**Challenges**:

1. Spatial-temporal development of flowers
2. Manipulating clusters of similar looking flowers
3. Reaching flowers in difficult locations
4. Managing variations of flowers and different crops
5. Working alongside and being accepted by the growers
6. Improving effectiveness and reliability, reducing costs







**Design Methodology:**

- 7 Robots in 1: the drivebase and each of the 6 arms act as cooperative agents
- Holonomic drivebase acts as an executive SCARA manipulators act as reactive agents

**Visual Servoing For Continuous Tracking:**

**Impact on Society:**

- Overcome the shortage of natural pollinators
- Allow selective pollination and flexible pollination schedules
- The precision manipulation ability can benefit other agriculture applications

**Education and Outreach:**

- Research and learning opportunities for students
- Open sharing of developed designs and software
- Improving diversity, workforce training, and outreach

**Broader Impacts:**

- Increased acceptance of human-robot collaboration with no specialized training
- Increased feasibility of precision agriculture in traditionally unfavorable environments

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