

The Hive: Drone Aided Pollen Distribution

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Abstract

The team intends to create a drone capable of detecting flowers and performing pollination in a similar fashion to bees and integrate a collection of drones into a “swarm”. Honey bees perform about 80% of the world’s pollination. As the years go on, we are seeing a significant decrease in pollinating bees. The honey bee population has declined from 6 million hives in 1947 to 2.4 million hives in 2008 - a 60% reduction. Bees are dying from a variety of factors including drought, habitat destruction, nutrition deficit, air pollution, global warming, invasive species and pesticides that protect the plants. When they go to pollinate flowers and plants, they end up being killed by the pesticides that protect those plants. Invasive species such as the murder hornets have recently been found in the United States, providing a new source of danger for the bees. The hornets attack honey bee hives, killing adult bees and devouring bee larvae and pupae, while aggressively defending the occupied colony. Bees pollinate plants producing fruit, nuts and vegetables, and are crucial to the nation's food industry. Attack by the hornets risks decimating bees, which are already on endangered lists due to their sharply declining numbers. We are seeking to find an alternative to keep our pollination needs for the future. Previous iterations utilized a spray delivery system to pollinate an area which is less precise wasting resources. Intended users are farmers and environmental conservation groups. The project will require an extensive amount of programming and developing of image detection software to realize the full potential. The intention to use a drone that is already commercially available will assist in reducing labor and material costs however the use of commercial equipment may increase the difficulty in integration with developed software.