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Abstract

Document Sections

1. Background
2. Our Approach
3. System Description
4. Laboratory Tests, Field Tests, and Validation

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Abstract:

Supply and availability of labor for fruit harvesting is a problem worldwide, and attempts to mechanize the fruit harvesting process have been carried out for decades. During the last century, fruit harvesters have tried mechanical methods such as trunk shaking, canopy shaking, raking, and mass mechanical penetration. Though they are economical alternative options for harvesting nuts, olives, cherries, and prunes, these brute-force mechanical methods have had limited results for citrus fruit. Robotics has also been tried. Technical challenges in robotics include recognizing and locating the fruit and detaching it according to prescribed criteria without damaging either the fruit or the tree. The key practical problem, though, is economic. A robotic system needs to be economically sound to warrant its use as an alternative to hand picking. Cambridge, Massachusetts, based Energid Technologies Corporation is developing a practical robotic fruit picking system whose concept is driven by the economics of mass harvesting while leveraging machine vision and robotic guidance and control. The