

Coordinated control of drones towards 3-D visual map reconstruction of farmlands

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Drone technology has been highly matured and expected to contribute to productivity improvement in various frameworks, ranging crop monitoring, pesticide spraying, and map reconstruction of farmlands. Fully autonomous drones have been rapidly developed and they are almost in the practical application stage beyond the demonstration stage. Meanwhile, coordinated control of multiple drones is expected to enhance the mission efficiency especially for vast and/or spatially distributed fields while ensuring energy persistency. In this talk, we address the coordination for efficient aerial image sampling for 3-D map reconstruction. To this end, we present a novel “angle-aware” coverage control in view of the fact that taking images from rich viewing angles is a key in having a high-quality map. Extensive simulations and experimental videos demonstrate the effectiveness of the proposed method.