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ROBUST SURVEILLANCE ANALYSIS TOOL FOR NATURAL OBJECT DETECTION USING HYPERSPECTRAL AND LIDAR IMAGERY

Abstract

During the past decade, hyperspectral and LIDAR research has dominated the remote sensing field, resulting in various scientific tools and accompanying discoveries. Due to the vast applications and recent publications, researchers are identifying and using both means of data (LIDAR, hyperspectral) to discover new answers towards their respective fields (e.g. agriculture, law enforcement, material identification and public health). However, not many tools with the functionality of analyzing the fusion of respective data exist. This paper will present an overview and survey of different tools dedicated to the analysis of the fusion of such data, with the purpose of introducing a new architecture to analyze complex issues in society involving common breeding grounds of vector-borne diseases and precision agriculture modeling to monitor crops, among others. This tool aims to improve current methods of analyses for such areas. To design such architecture, we conducted rigorous research and gathered key elements in recent literature. Especially, this effort focuses on the identification of natural objects with LIDAR technologies and fusing such data with hyperspectral material identification properties. Such techniques could be embedded in an onboard processing software architecture inside airborne or spacecraft platforms, allowing us a more frequent revisit time to analyze changes of these objects over time.