AutoPPLEX: Automated Pest Infestation and Parasitism Level Estimator

Project Leader:

Divina M. Amalin, PhD

De La Salle University Manila

Abstract

As of 2018, agriculture accounts for 26% of Philippine employment, but it only contributes 10% to the country's gross domestic product (GDP). This underperformance can be attributed to several issues plaguing the sector, including its rampant pest problem which greatly reduces crop yield. Traditionally, pesticides have been used to control pest population, whose continued use of pesticide has shown to have an adverse impact on the environment and may unintentionally increase pest populations by eliminating their natural enemies. In response, biological control agents have been proposed as an alternative for pest management. However, evaluating the efficacy of biological control programs heavily relies on manual visual inspection, which is slow, tedious, and error prone. To alleviate these issues, we propose an Automated Pest Infestation and Parasitism Level Estimator (AutoPPLEx), that will provide count estimates of pests and parasitoids given images of leaves. This tool enables us to quantitatively evaluate the efficacy of various treatment strategies and biological control programs, allowing us to make better and more informed decisions on pest management. Moreover, we can use AutoPPLEx for continuous monitoring and surveillance, enabling early detection of pest infestations as well as early treatment, which leads to higher yields-to-losses ratio by eliminating the pests before it can spread further.