Investigating generative neural-network models for building pest insect detectors in sticky trap images for the Peruvian horticulture

Pest insects in Peruvian horticulture

The inspection of pest insects is done manually in the field, which implies costs, time and staff exhaustion. The most used pest control strategy is indiscriminate chemical control, which implies possible damage to the environment and people.

Synthesized images and original images

We adjusted three generative models (DCGAN, WGAN and VAE) to acquire the capacity to synthesize pest insect images to be used as data augmentation procedures for subsequent classifier induction.

Detection with YOLOv5

To further assess the utility of the synthetic data, we induced YOLOv5m models with such data and evaluated their performance in identifying and classifying insect species in test sticky trap images. To evaluate the detection performance of the YOLOv5m models we use the area under the curve precision-recall (AUC) in testing data.

References


