DEVELOPING A UAV SOURCED DATABASE FOR AI TRASH DETECTION IN COTTON FIELDS

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Abstract

The US cotton industry has seen an increase of extraneous matter such as plastics, twine, and other trash. In turn, researchers have focused efforts on detecting and removing that trash in different areas of the cotton harvesting and ginning processes. The objective of this work is to develop a database of UAV sourced RGB images to train an AI trash detection system. The images collected need to be preprocessed for size, shape, and format. Images containing trash also need to be annotated, which is a time-consuming process. GPS location embedded within the image is useful in the determination of portion of the field where the trash needs to be collected. The optimization of this process is labor intensive as thousands of images need to be collected and processed before training of the AI can occur. After training, the AI system requires assessment on several performance metrics and tuning as needed.