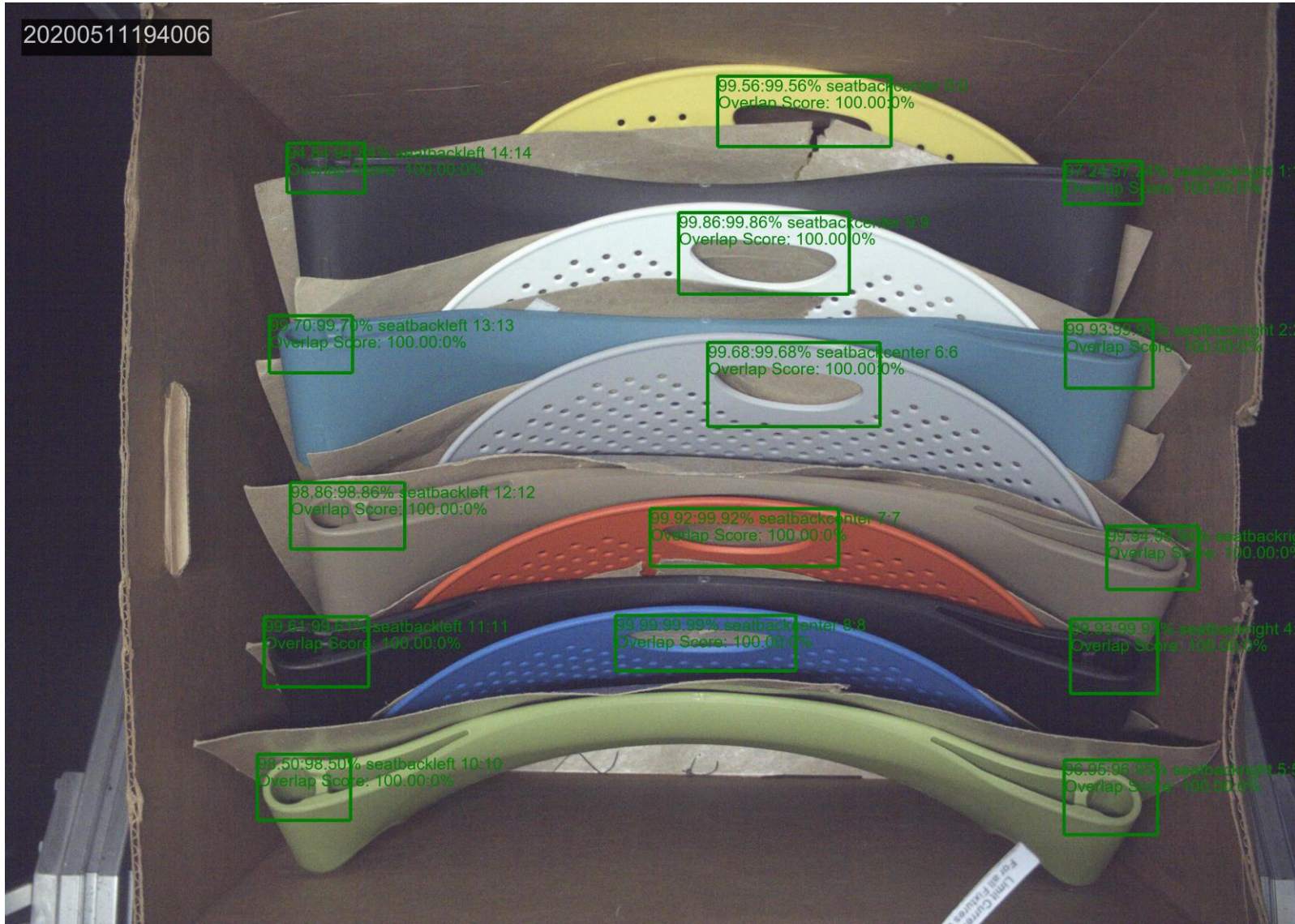




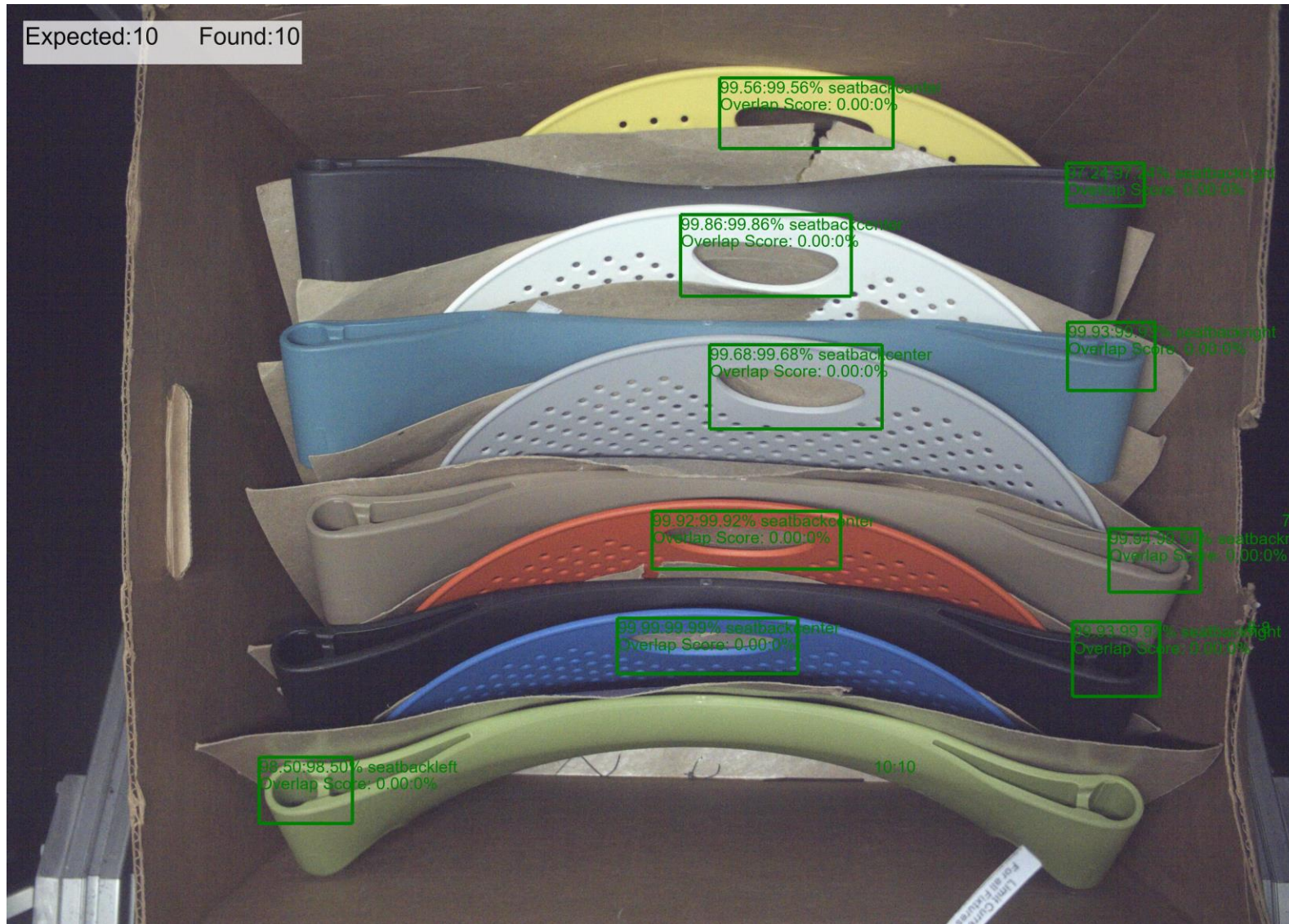
PAQi Object Detection with Color Classification

Colored Office Chair Components

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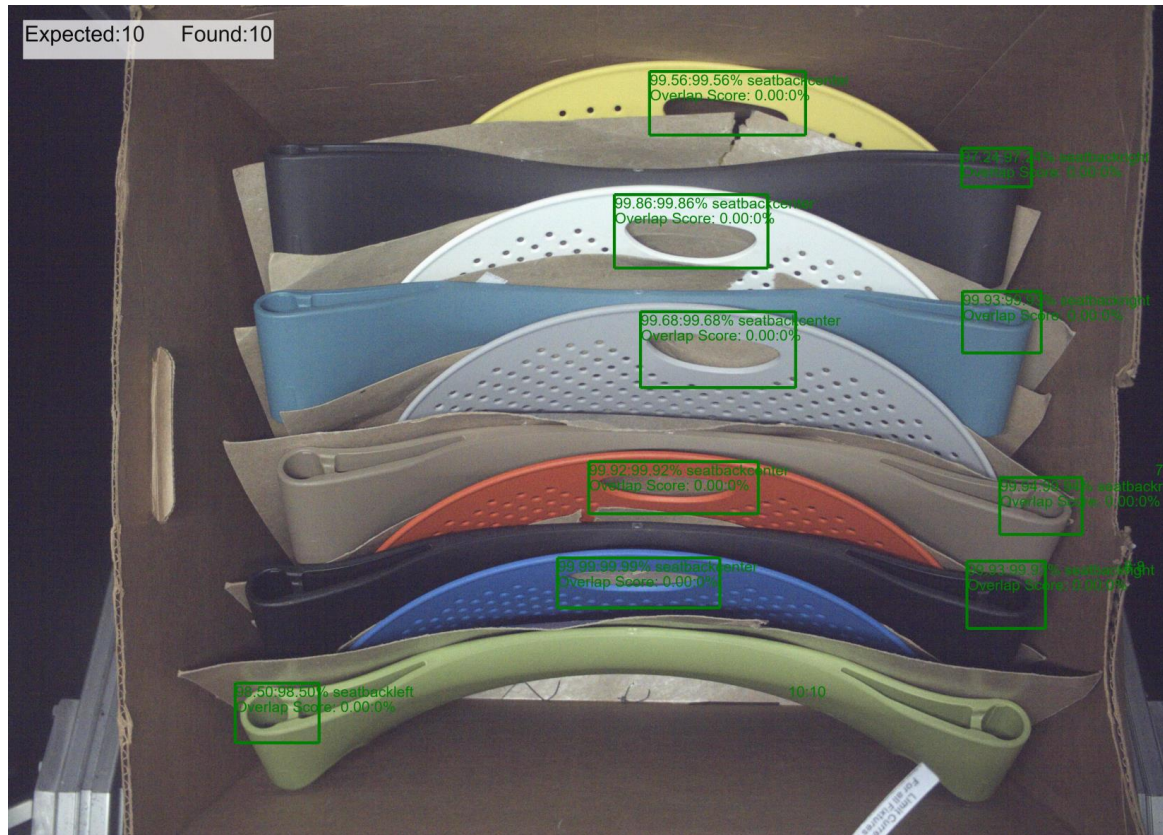


Object detector finds unique features on alternately arranged office chair backs in shipping box. In this image, LM3's object detector finds all objects



Object detected with highest score select for each part to count the expected versus the found number of parts. If expected = found, found objects are cropped and fed to a color classifier to verify the color of each part matches the expected.

Results	Expected
PASSED	178835-LMN-LEMON
PASSED	178835-BK-BLACK
PASSED	178835-98-STUDIO WHITE
PASSED	178835-ZN-BLUE FOG
PASSED	178835-ZR-SHADOW
PASSED	178835-ZK-CAPPUCCINO
PASSED	178835-SX-SALSA RED
PASSED	178835-BK-BLACK
PASSED	178835-FQ-FRENCH BLUE
PASSED	178835-79-GREEN APPLE



Software verifies all object colors match the expected color for final inspection.

Advantage Over Other Systems

- PAQi can be used to control the entire station using the onboard PLC to connect custom built applications with the PAQi's core image acquisition and analysis software.
- The ability to find the parts regardless of their position in the box prior to color classification.
- Deep learning color classification is superior to traditional machine learning classifiers.
- Color classifier built on Tensorflow Auto ML to optimize model construction prior to training.
- Deep learning color classifier is trained using QC Hero, LM3's online classifier training tool.
- Color classifier can be continuously trained to improve accuracy over time.