

VIVID MACHINES INNOVATION HIGHLIGHT



**VIVID
MACHINES**

COMPANY OVERVIEW

30% of fruit produced doesn't make it into grocery stores due to quality issues. Digitizing production to manage crop loads better could help growers intervene early, increasing marketable yield, sustainability, and the amount of food produced on existing acreage. Vivid Machines is developing a spectral sensor and computer vision technology to digitize permanent and specialty crop production – initially focused on apples. The Vivid X-Vision system captures plant-level data to see plants' chemical and physical properties, help with early-stage issue detection and automated counting and sizing of fruitlets through yield prediction.


LOCATION: TORONTO, ON

TECHNOLOGY




Artificial Intelligence

Tess O'Mara, Project Manager

 **VIVID
MACHINES** tess@vivid-machines.com
vivid-machines.com

Rick Penwarden, Sr. Manager, Marketing

 **CENGN** rick.penwarden@cengn.ca
cengn.ca/projects

MANUALLY COUNTING AND INSPECTING FRUIT

To manage crop loads today, growers and their labourers manually measure, count, and inspect fruit; however, with plants growing every day and farms and orchards being hundreds or thousands of acres, growers can't get an accurate understanding of their crop. Because of leaf canopies, satellite and drone technologies can't solve their data collection problems either.

AUTOMATING FRUIT COLLECTION AND INSPECTION

The Vivid Machines system easily mounts onto existing farm equipment such as tractors or ATVs and captures data on every plant as growers conduct regular farm activities. The system provides per plant, row, and block-level insights to inform thinning, pruning, and input strategies to maximize marketable yield.

TRAINING VIVID X-VISION'S MACHINE LEARNING MODELS

Using the CENGN Testbed, Vivid Machines trained their machine learning models to detect fruit and tree attributes and validated its accuracy. In their model prediction accuracy test, Vivid Machines concluded that their machine learning models operate at 95%+ accuracy. Moving forward, Vivid Machines plans to scale their solution to do early detection of pest and disease, and to work with other fruits.

**"With access to the
CENGN Testbed,
we trained various
machine learning
models to detect
fruit and tree
attributes with
a high degree of
accuracy."**

Jonathan Binas,
CTO,
Vivid Machines

