

Agriculture and Automation Solutions (A&A)

Introduction

Dr. Uyen Nguyen

Smart Farm in QTSC:

- We have successfully installed full packages of greenhouse, drip irrigation systems, automatic control systems at QTSC



Smart green house

Melon automatic planting process

**Post harvest
Technology**

Smart Farm with Hydroponics at QTSC

We have successfully installed two automatic hydroponics planting systems at QTSC



Automatic Hydroponics System



Smart Agri software

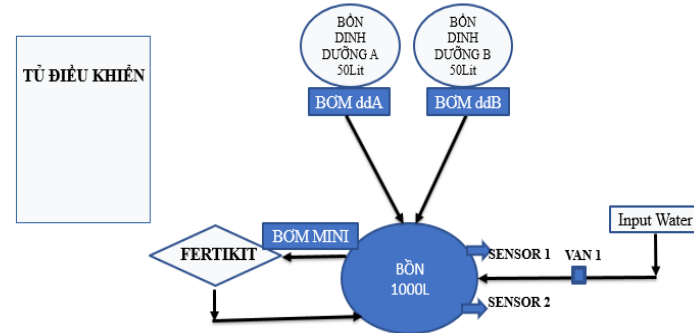


Automatic Planting process

Optimfertilizer (automatic fertilizer)



Mechanical and Electrical System



We own
the patent
in Vietnam

- Affordable by:
 - Get rid of expensive controller (PLC)
 - Program on Arduino and Raspberry
 - Reduce price by 10 times (from 30K to only 3K)

Plant Factory at QTSC:

Plant Factory is a blending between Hydroponics and Led technologies to create a perfect environment for plant in the container.



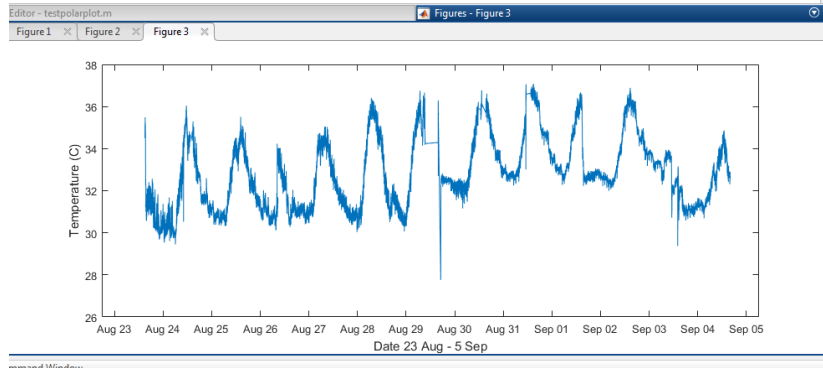
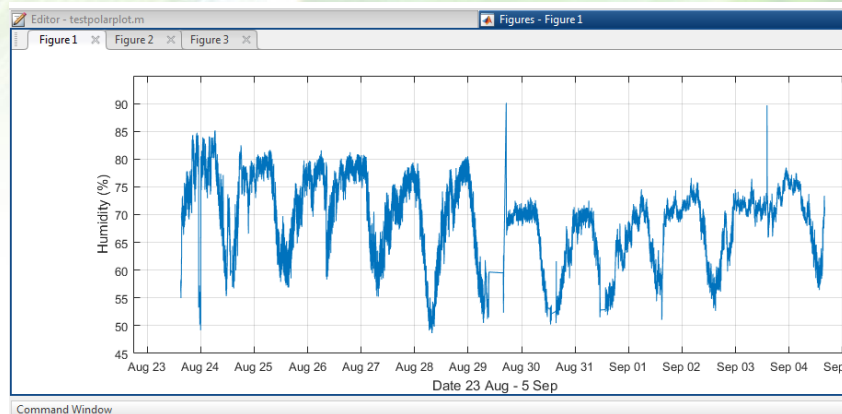
Based on the technology from MIT's Plant Lab and CityFarm Project



Automatic Mushroom Farm

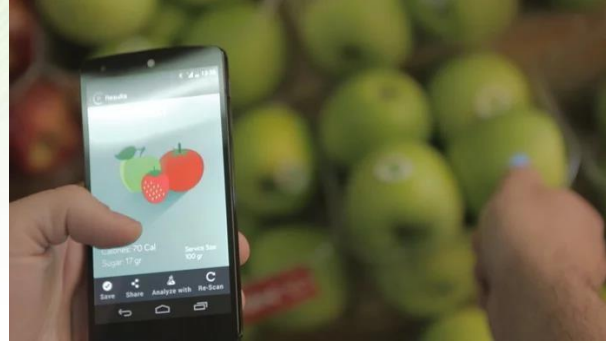


- Plasma Technology
- Mist controller
- Temperature controller

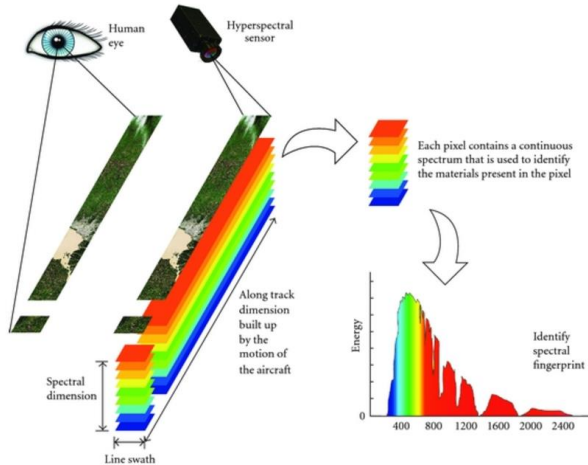


- Increase productivity by 600%
- Investment return ROI=200%
- Initial investment is 60M = 3K USD

Hyperspectral products for Food Safety

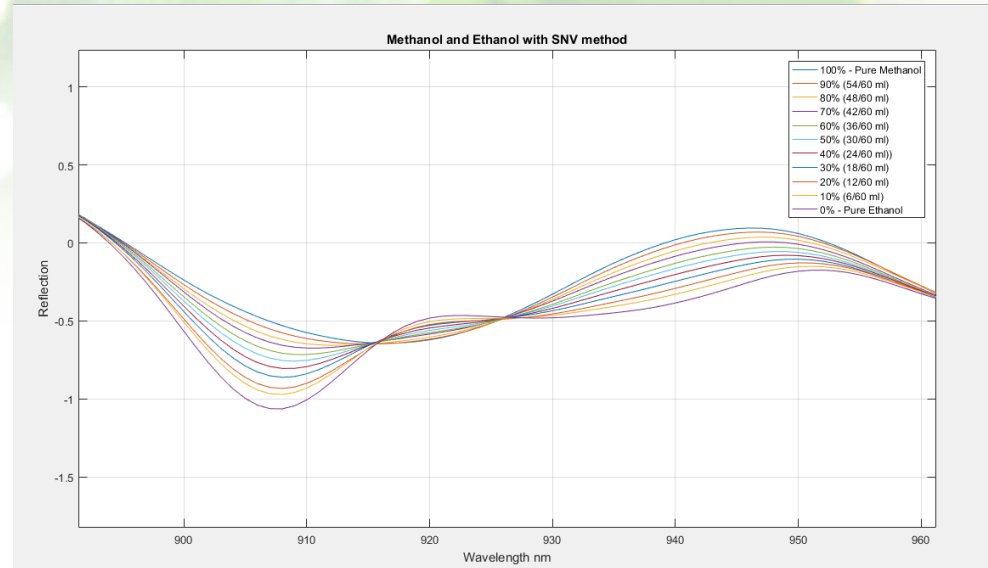
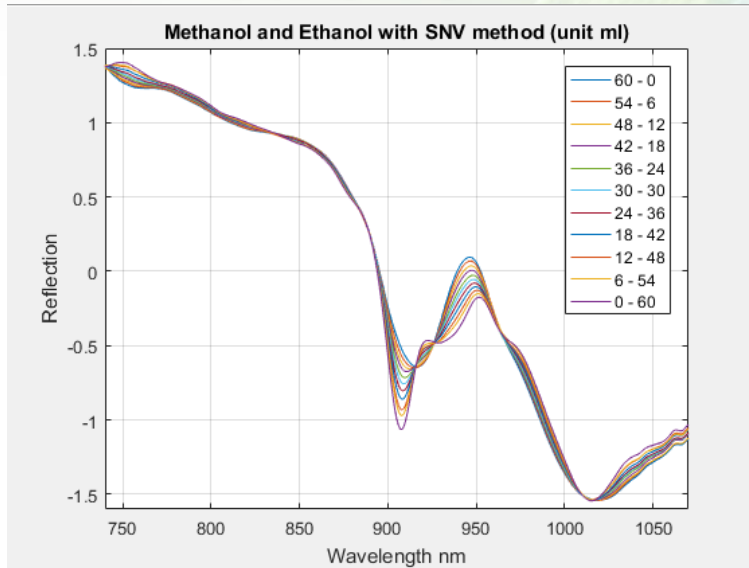


Detect nutrient
in fruits,
vegetables



This is the first in
Vietnam to be able
to detect Methanol
and Ethanol. It can
also detect fake
liquor as well.

Hyperspectral Preliminary results of Methanol mixture with ethanol

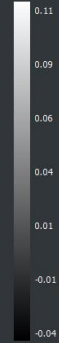
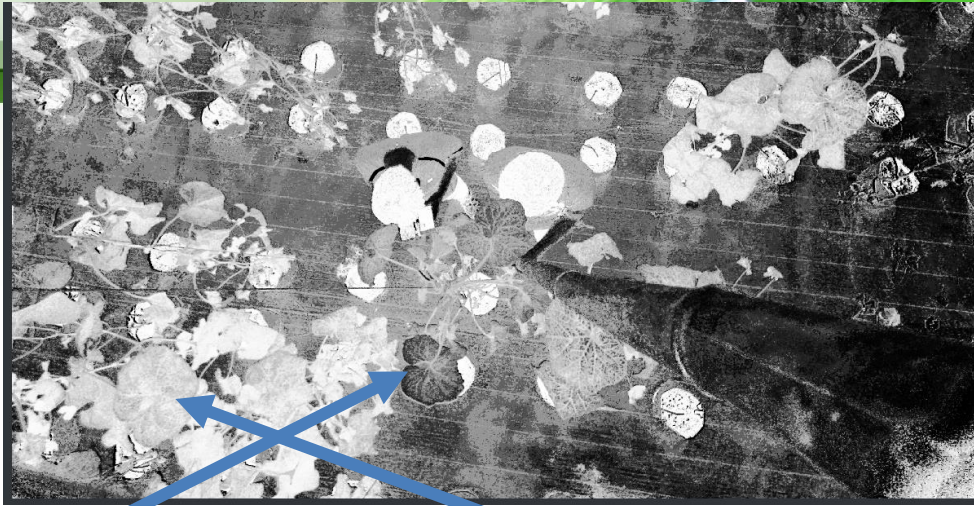


- Results of mixture of Methanol and Ethanol (mixture of 0% - 100% of Methanol)
- There is a clear shift in amplitude and frequency

NDVI Project

- Chỉ số NDVI (Normalized Difference Vegetation Index) cho thấy mức độ tập trung của thảm thực vật và đặc tính khác nhau của thảm thực vật như: sinh khối, chỉ số diện tích lá, khả năng quang hợp ...
- Trong nông nghiệp: cung cấp dữ liệu về sức khỏe cây trồng, xác định được sự thiếu nước của cây, phòng chống cháy rừng, ...
- Chỉ số NDVI được tính theo công thức sau: $NDVI = (NIR - R) / (NIR + R)$





NDVI index

The NDVI shows the lack of water in the Melon leaves. Darker color means lack of water



The NDVI shows the leaves with water in a brighter color

Tested at Banana Farm

We tested our system at a 1000 hectare banana farm in Vietnam



RFID System Overview

Porcitech Database



Counting
gate
With RFID
Reader



Weight Scale
With RFID
Reader



Handheld Input
Device with RFID
Reader/Writer



Weight gate
with RFID
Reader

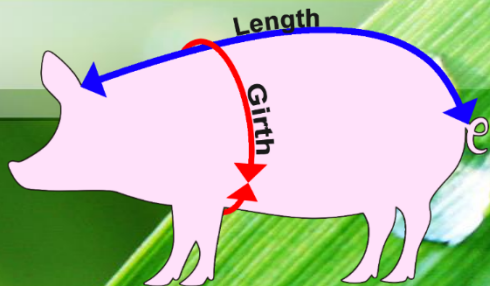




Pig detection and measurement

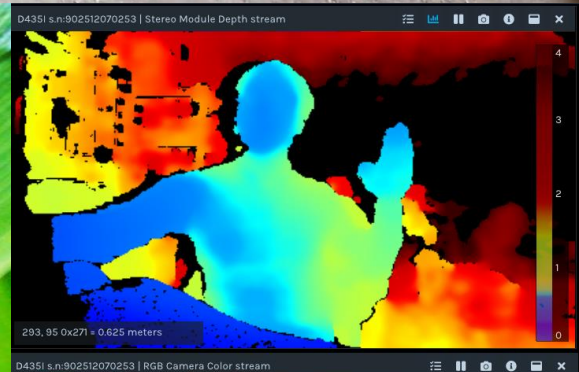
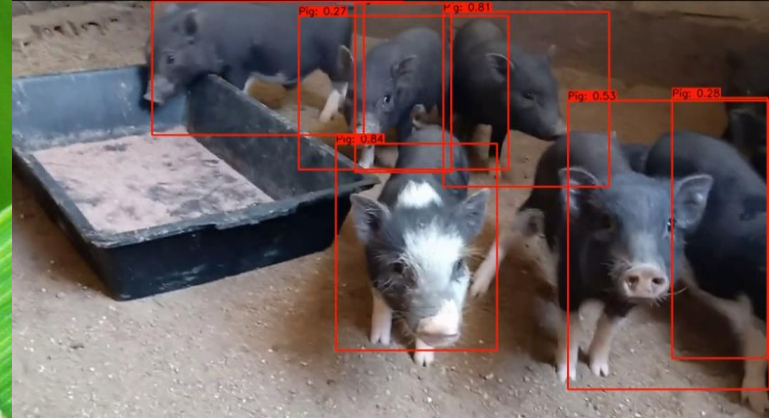
Using the camera with AI technology to detect Pig,

- Measure distance between Pig and camera.
- Measure the Length and Girth of the Pig.



Following formula:

- Square the *Heart Girth* to get the *Girth Result*.
 - Multiply the *Girth Result* by the *Length* and MULTIPLY by 69.3 (constant)
- => Pig in Kg





We build our own
microwave systems for
agriculture products.

Microwave technology in food processing




\$ Price is reduced by more than half



Successfully tested:

- Rice, get rid of Millets
- Banana
- Hot pepper
- Cacao
- Vegetable: Kale



Thank you so much

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