

CENTRO DE ASTROFÍSICA Y TECNOLOGÍAS AFINES

MIDIAN

Medium Ingredient Detector Instrument with InstAnt Notification



CENTRO DE ASTROFÍSICA Y TECNOLOGÍAS AFINES



Problem

- Undesired mix of grain products such as very small raw materials of food plants
- The MIDI, or medium ingredient materials, is mixed with bigger grain products in order to balance the animal diet
- The undesired mix can cause an inefficient growth of the animal and may cause health problems

Sesquicarbonato



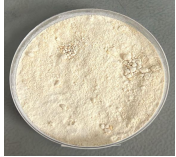
Bicarbonato



Fosfato



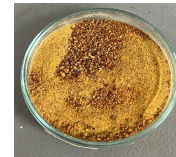
JPC



Lisina



Gluten



Conchuela

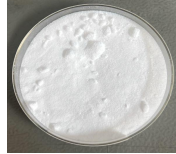


Solution: Spectroscopy

Sesquicarbonato



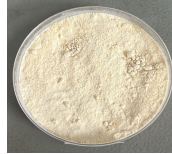
Bicarbonato



Fosfato



JPC



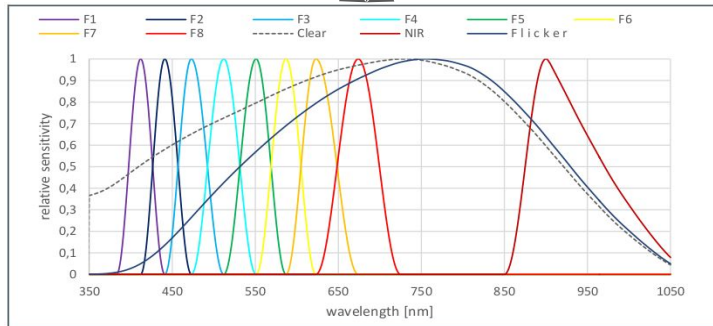
Lisina



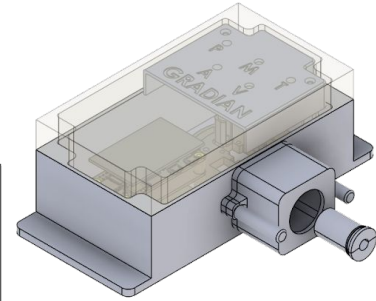
Gluten



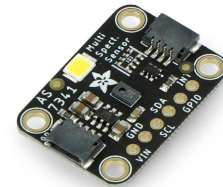
Conchuela



Custom Sensor



Spectral Sensor

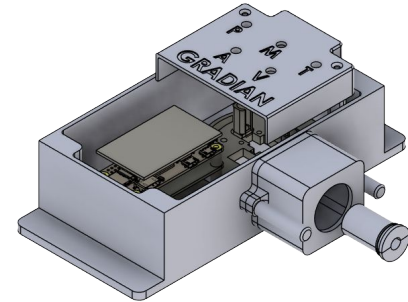
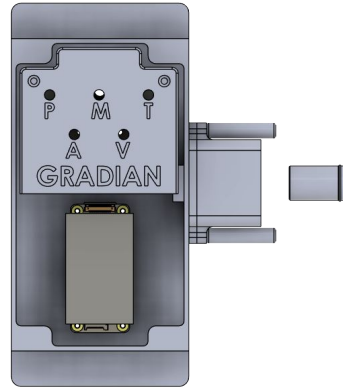
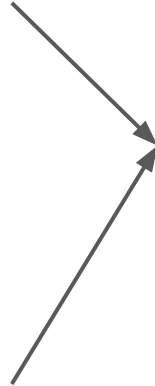
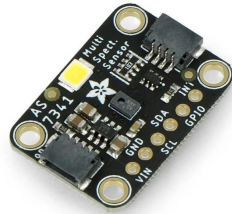


Camera



Solution: Custom Sensor

- We built a sensor that contains the spectral sensor and camera, as well as the microcontroller
- The sensor is installed in strategic position so it constantly takes data of the food products

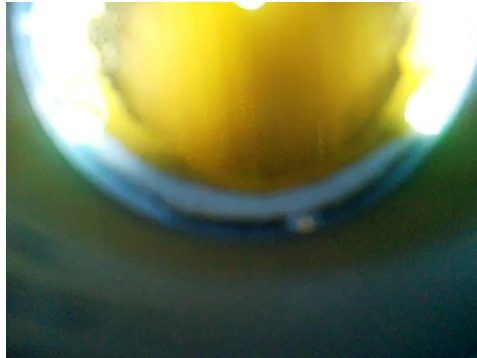


Sensors

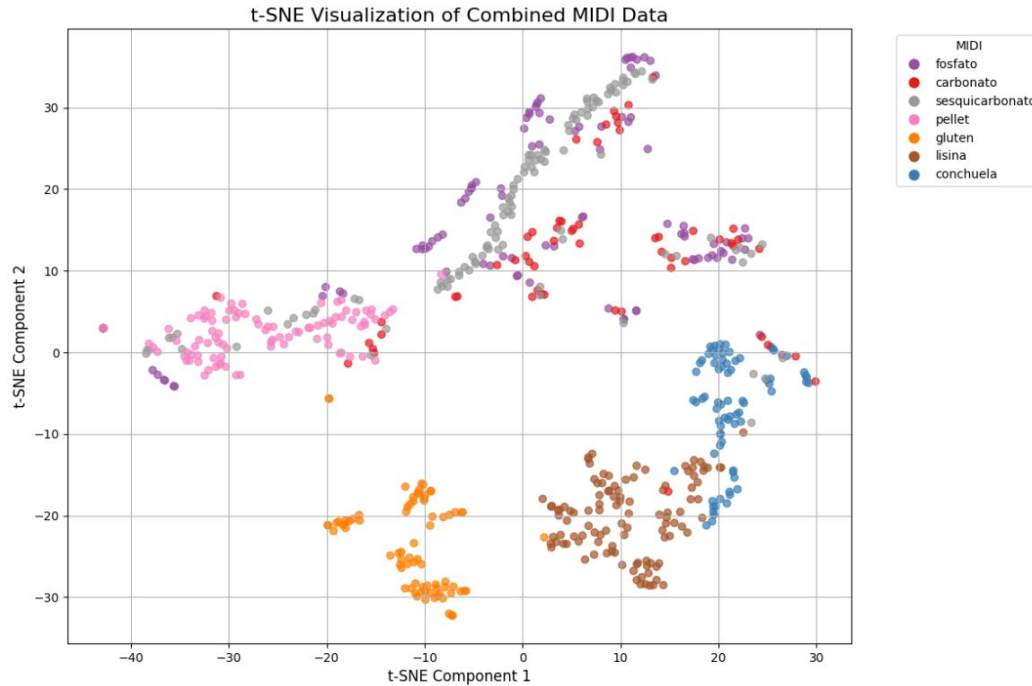


Sensors

- 3 sensors are going to be installed in the Agrosuper Casablanca Food Plant
- By alerting in real time it can tell via a Telegram Bot, the LED configuration or sending a message, what is the sensor currently looking to

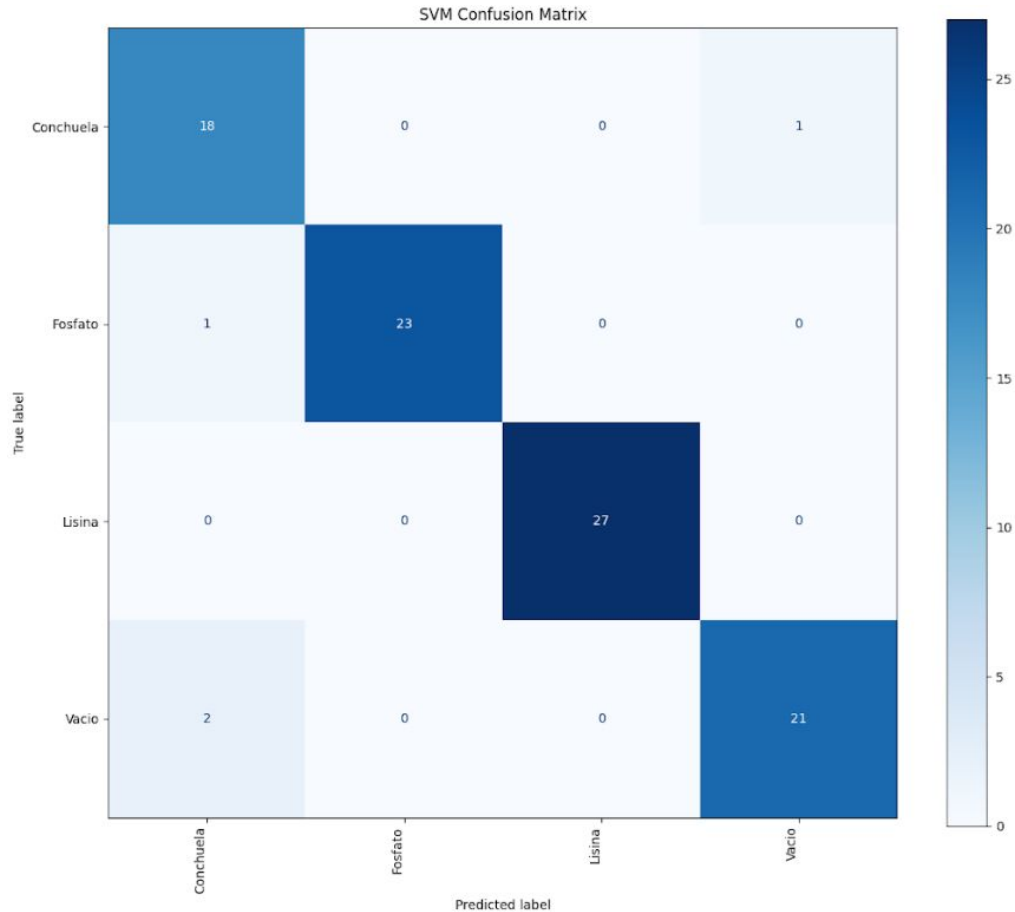


Sensor Classification Algorithm



- We use several simple classification algorithms in order to make a stacking prediction algorithm
- The classification algorithm is still under tests and development
- The results shown are still laboratory tests

Sensor Classification Algorithm

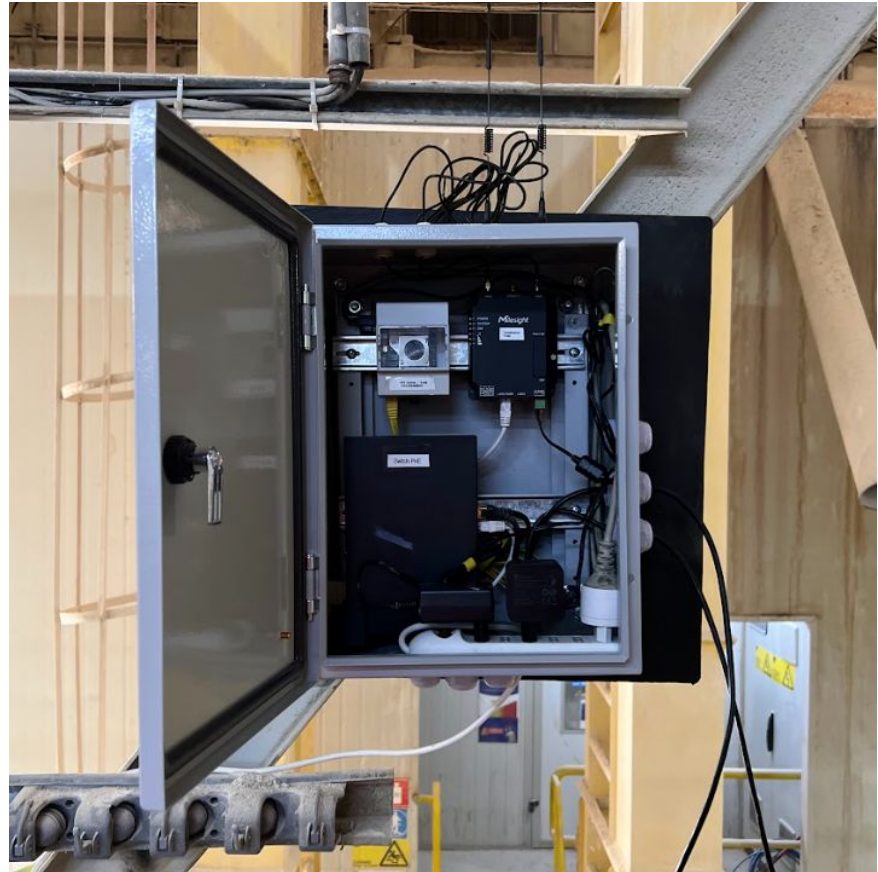


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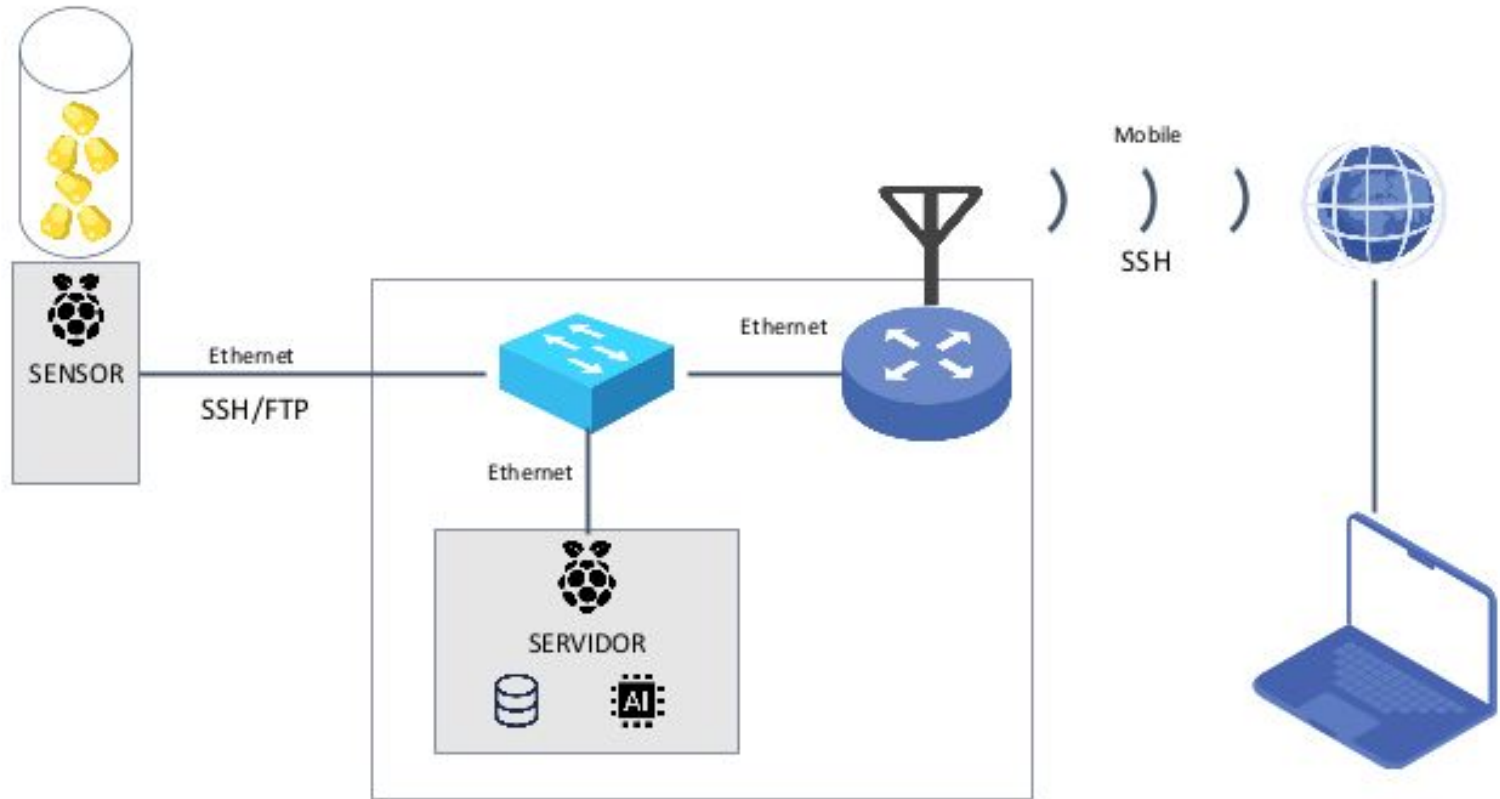
96.5% of Precision

Server

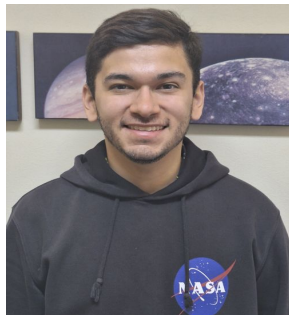
- The sensors communicate and are powered with a PoE system
- The server contains another microcontroller that receives and processes the data of the sensors
- It also contains a switch PoE and an industrial router, so it is possible to access to the server and to the sensors



Sensors - Server communication



Team



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