

Camera vs Sensor

Data

The data used was taken from the lab using luke's sensor and the following prototype



For every MIDI product, there were taken approximately 75 samples (75 pictures with the camera and 75 data sets with the sensor)

Algorithm

For both the camera and sensor data, we used the clustering algorithm **t-sne**.

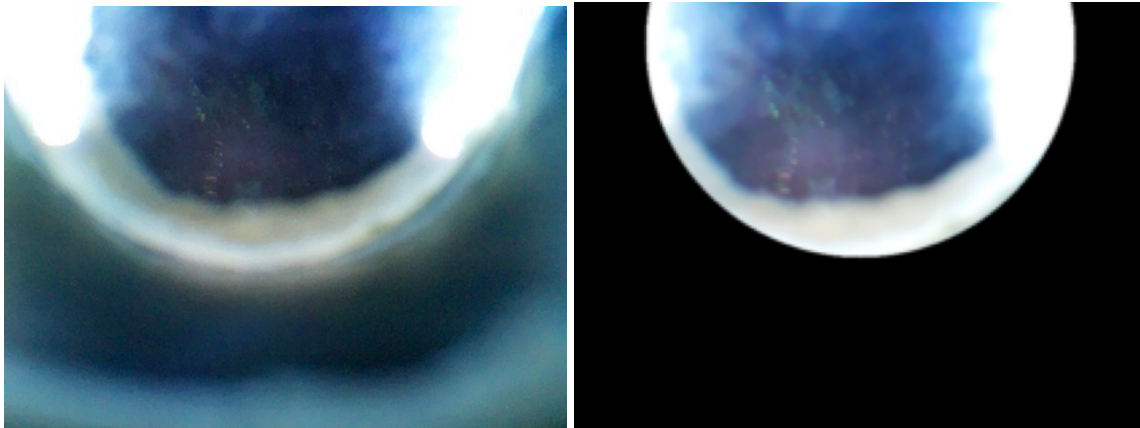
Sensor

The data coming from the sensor is the one with the information of the 10 channels: 415nm, 445nm, 480nm, 515nm, 555nm, 590nm, 630nm, 680nm, clear, nir.

Camera

The data coming from the camera is processed as follow:

- First, we apply a mask to the taken picture. We only left coloured the area of interest in the center.



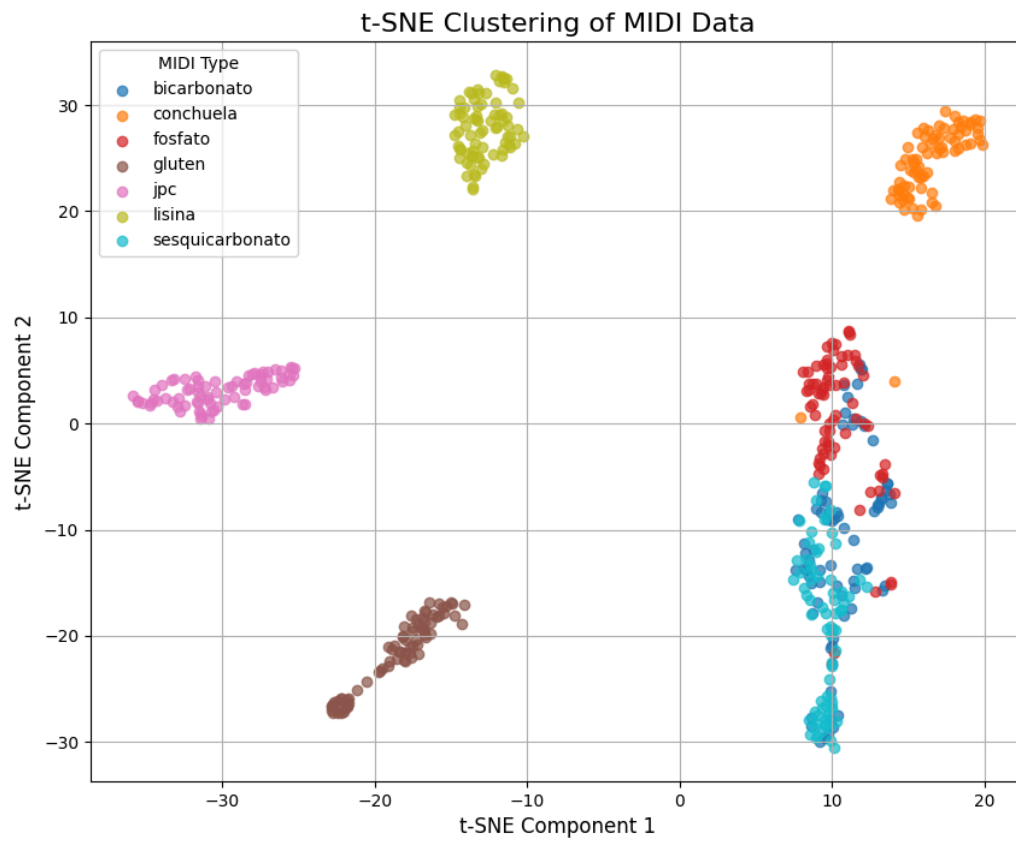
- Later we scale the picture, this means that we resize the size of the picture, reducing its quality. In this case we reduced into 1/2
- Then we normalize the picture. This means that we transform each pixel of the image into known values
- Finally we blurry the image. This means that we reduce its details by averaging the pixel values in the neighborhood

Results

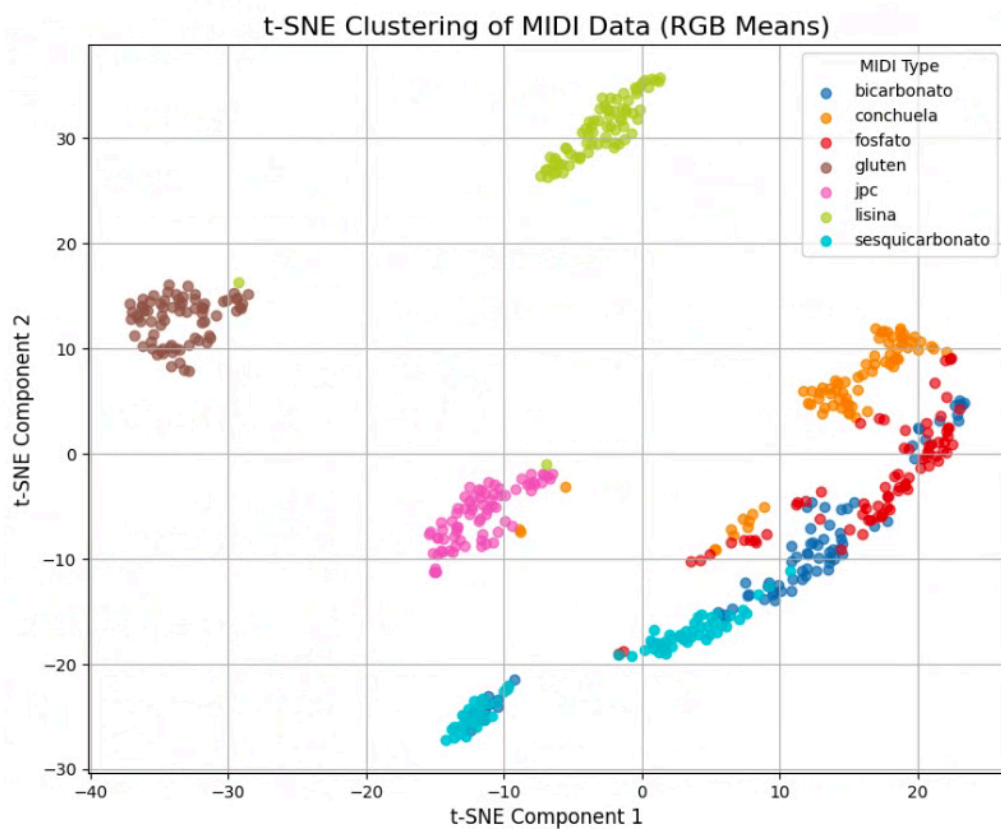
Below you will find the camera results for the following days. In the left, you will find the clustering using the camera's data and at the right you can see the results using the sensor's data

Camera

Using raw data from the camera

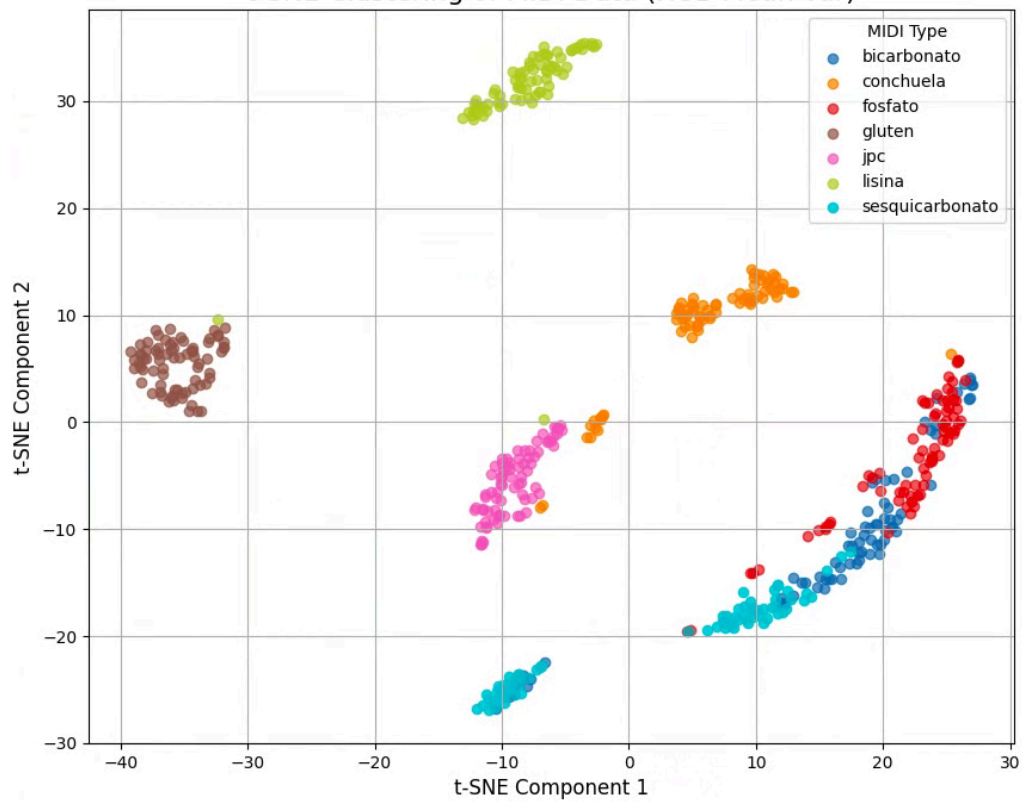


Using the R,G and B means from each picture



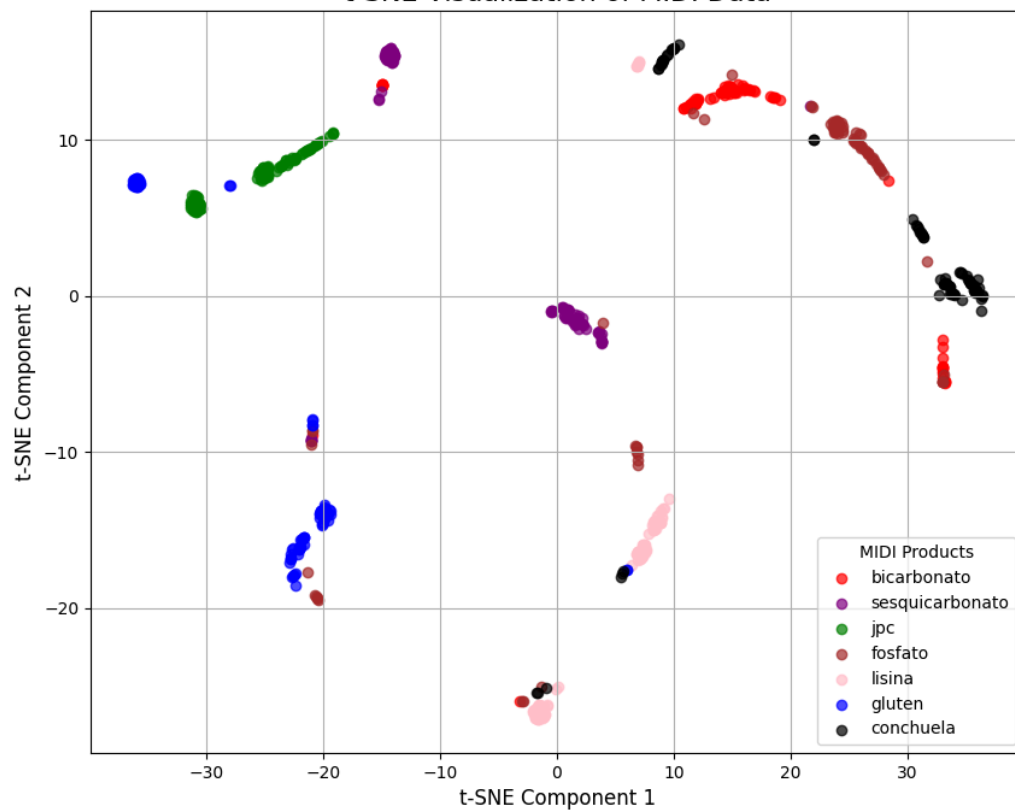
Using the R,G and B mean and variance from each picture

t-SNE Clustering of MIDI Data (RGB Mean-Var)



Sensor

t-SNE Visualization of MIDI Data

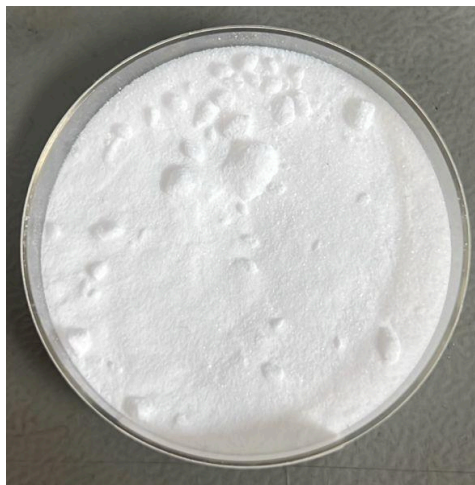


MIDI Products

Sesquicarbonato



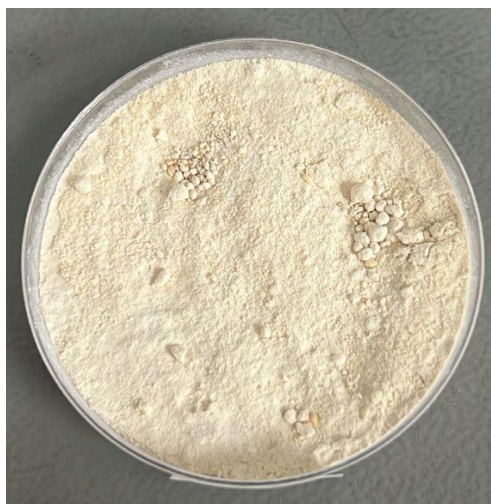
Bicarbonato



Fosfato



JPC



Lisina



Gluten



Conchuela

