@

UGENT CACAOLAB

www.project-krak.be

Cacaolab BV

nnovation & training from bean to praline

Experimental production facility

- Chocolate from bean to bar & compounds
- Confectionery products

Analytical toolbox

- Physicochemical analysis (rheology, DSC, XRS, microscopy, etc.)
- Sensory analysis
- Shelf life testing

Training Center

- Physical or online trainings

International Open Innovation Center on Cocoa & Chocolate Processing

Bilateral projects

- Research activities
- Product/process development
- Consulting services
- Customized training

- Confidential, IPR transferred





Training

- On-site, online or hybrid
- Masterclasses, workshops ‘Cocoa & Chocolate Processing’, webinars, etc.

- Open (to professionals)

- Open access to equipment (on a bilateral basis)

Collective projects

- Cacaolab = initiator
- R&D projects
- Multiple partners involved
- Funding possible

- Open to partners, shared IP

Tools

- Lab-scale bean-to-bar line
- Pilot-scale bean-to-bar line
- Extended analytical toolbox
- Training center (physical & online)

A grasp of our partners & clients

Van der Pol

Contact details

CACAOLAB BV

Skaldenstraat 121
Building A3/A4
9042 Gent/Desteldonk
Belgium

www.cacaolab.be

Claudia.Delbaere@Cacaolab.be
Hanne.Baert@Cacaolab.be

Cacaolab

Cacaolab_belgium

CacaolabBelgium

KRAK
OP ZOEK NAAR DE PERFECTE CRUNCH
JAN 2025–
DEC 2026

A G E N D A
4th June 2026

12:00 – 12:40 Walk in lunch

12:40 – 12:45 Welcome @ Cacaolab

12:45 – 13:45 KRAK work presentation

13:45 – 14:00 Demo: From signal to crispiness evaluation

14:00 – 14:15 Break

14:15 – 15:00 Questions & discussion

15:00 – 16:00 Tour @ Cacaolab

16:00 – 16:30 Closing & networking

UGENT
CACAOLAB

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CONSORTIUM OVERVIEW

STEERING COMMITEE

Agristo we love potatoes

Dossche Mills

Kellanova

Ecofrost GOOD WITH POTATOES

Lantmännen Unibake

Zeelandia

RESONIKS

Aviko

Vandemoortele shaping a tasty future

CAPTIC

SOLINA

Lotus Since 1932

IMCE

PARTNER IN FOODSOLUTIONS Family Dokter Company DKB

FiaS Food Ingredients & Specialties

UGENT CACAOLAB

PARTNERS

KU LEUVEN MeBioS

hogeschool vives RESEARCH GROUP FOOD PROCESSING MECHATRONICS

FF FLANDERS' FOOD

FEDERATIONS & RESEARCH

choprabisco.be CHOCOLATE | PRALINE | BISCUIT | CONFECTIONERY

F·G·B·B

UNIVERSITEIT GENT VEG-i-TEC

The KRAK Team

hogeschool vives
RESEARCH GROUP
FOOD PROCESSING
MECHATRONICS

KU LEUVEN
MeBiOS

Food Processing

Michaël Verlinden

Kevin Vynckier

Thomas Sprangers

Mechatronics

Catherine Middag

Tom Van Gaever

MeBios

Mohammed Saif Ismael Hammeed

Introduction & Recap

KRAK

OP ZOEK NAAR DE PERFECTE CRUNCH

KRAK aims to develop and validate **advanced acoustic methods** for the **objective** measurement of **crispness and crunchiness** in food products. By combining texture measurements with acoustics, signal processing and AI, the project supports the food industry in improving product quality, process control and sensory prediction.

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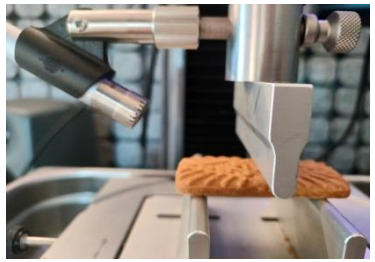
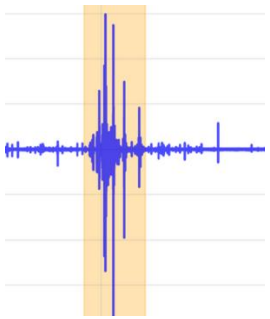
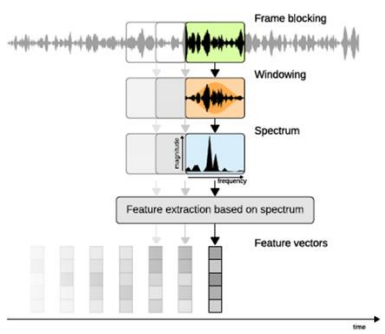
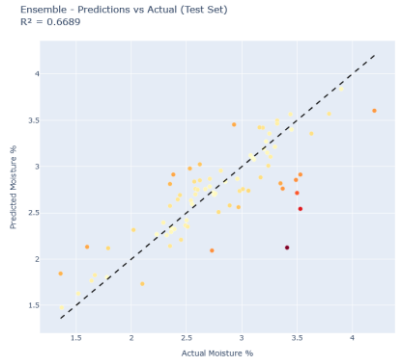








Method Optimization

Probe
Speed
Distance
Orientation
Microphone
Sensor

Audio Selection - Region of Interest (ROI)

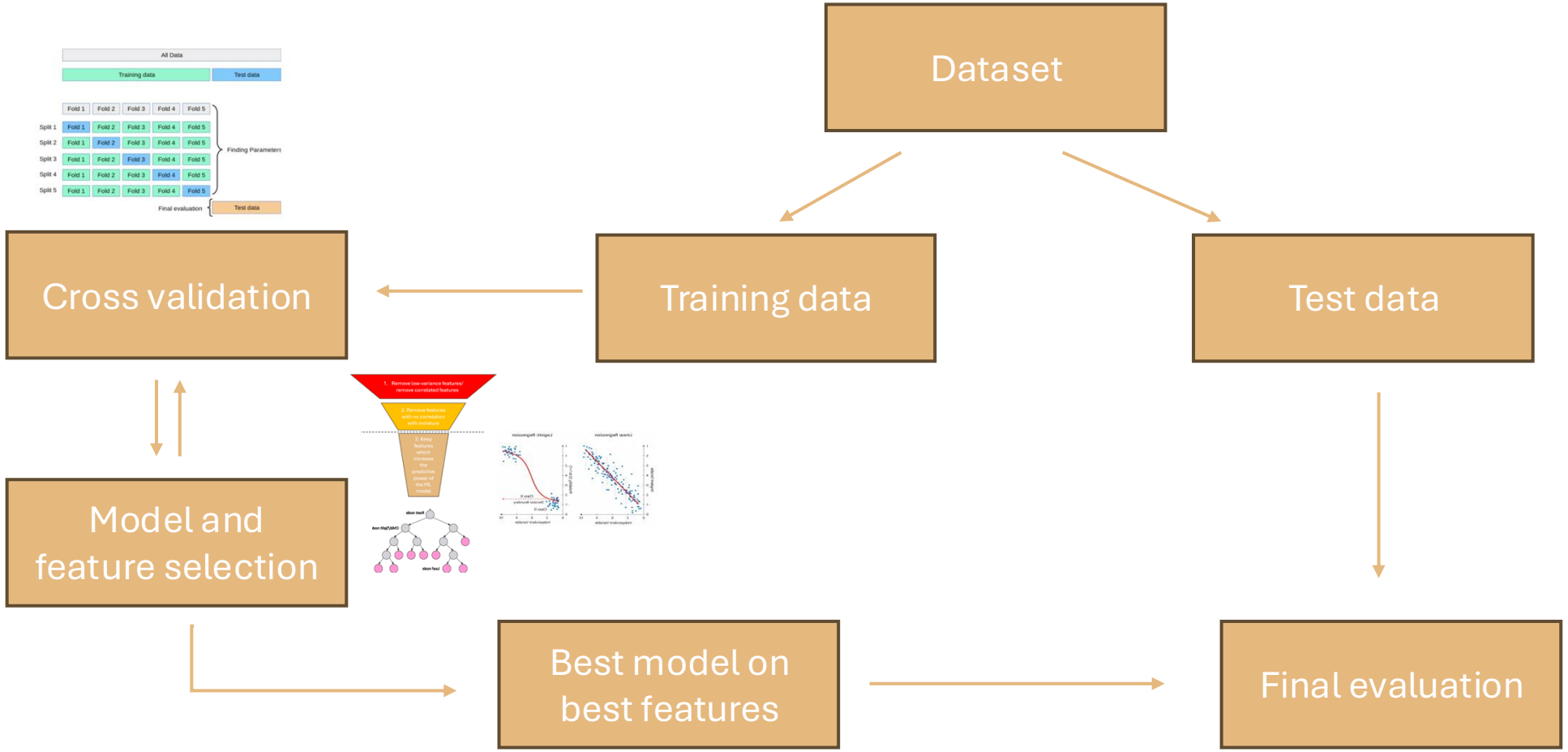
Audio Analysis & Feature selection

Model Selection, Training & Validation

correlation & validation

Sensory Data Collection

Model validation: experimental setup



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JAN 2025–
DEC 2026

THE AUDIOLAB
@ Food Innovation Park

https://www.project-krak.be/audiolab/

VLAIO

The Cases
methods & results

KRAK JAN 2025– DEC 2026

-1-
Chips

KRAK JAN 2025– DEC 2026

-2-
French
Fries

KRAK JAN 2025– DEC 2026

-3-
Cookies

-4-
Bread
(Baguette)

KRAK JAN 2025– DEC 2026

-5-
Chocolate

KRAK JAN 2025– DEC 2026

-6-
Breaded &
Battered
products

-1-
Chips

-2-
French
Fries

-3-
Cookies

-4-
Bread
(Baguette)

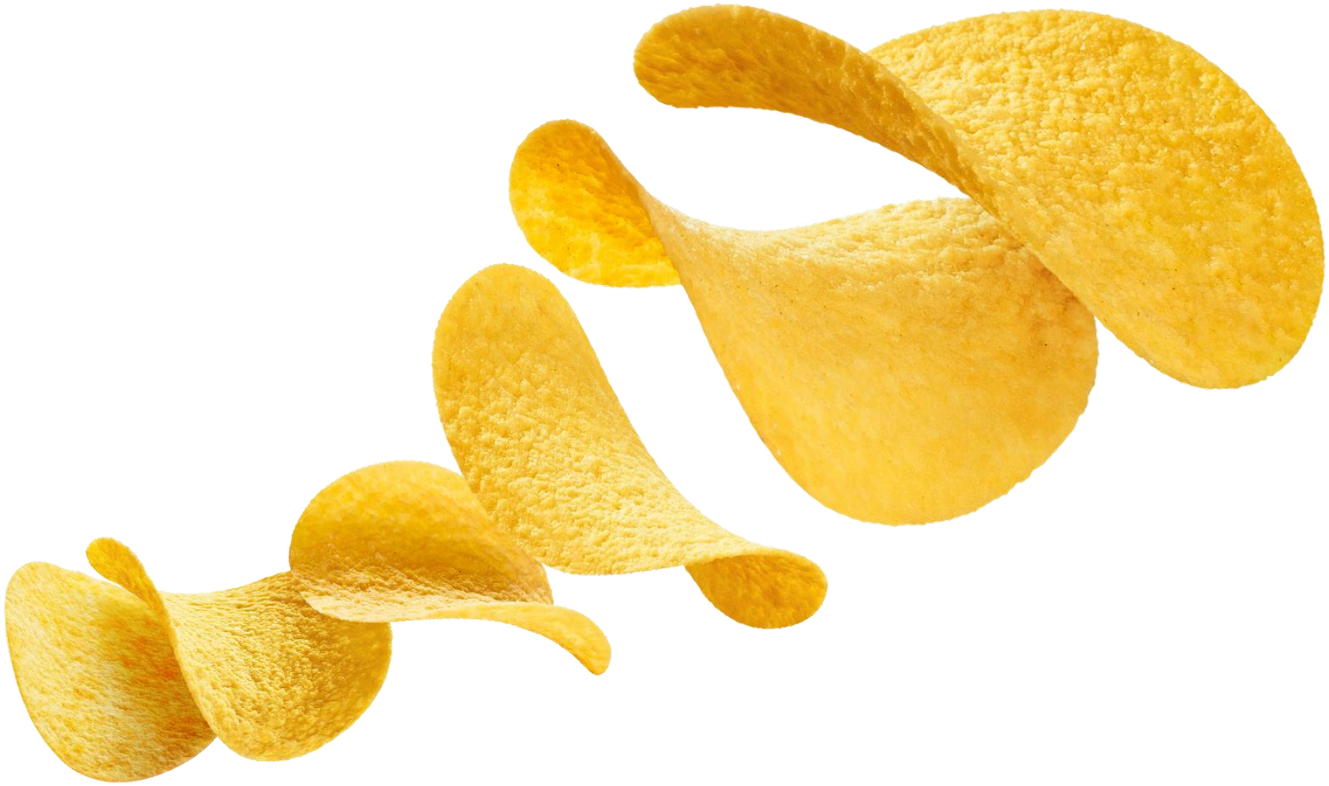
-5-
Chocolate

-6-
Breaded &
Battered
products

Method Optimization → Audio Selection - Region of Interest (ROI) → Audio Analysis & Feature selection ⇔ Model Selection, Training & Validation

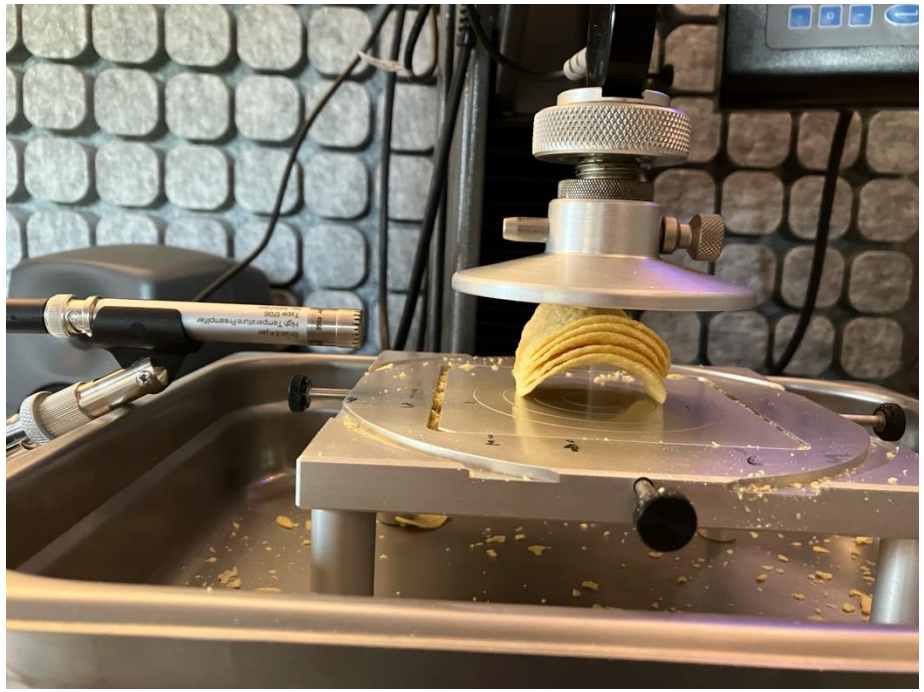
Audio Analysis & Feature selection ↕ correlation & validation ↕ Sensory Data Collection

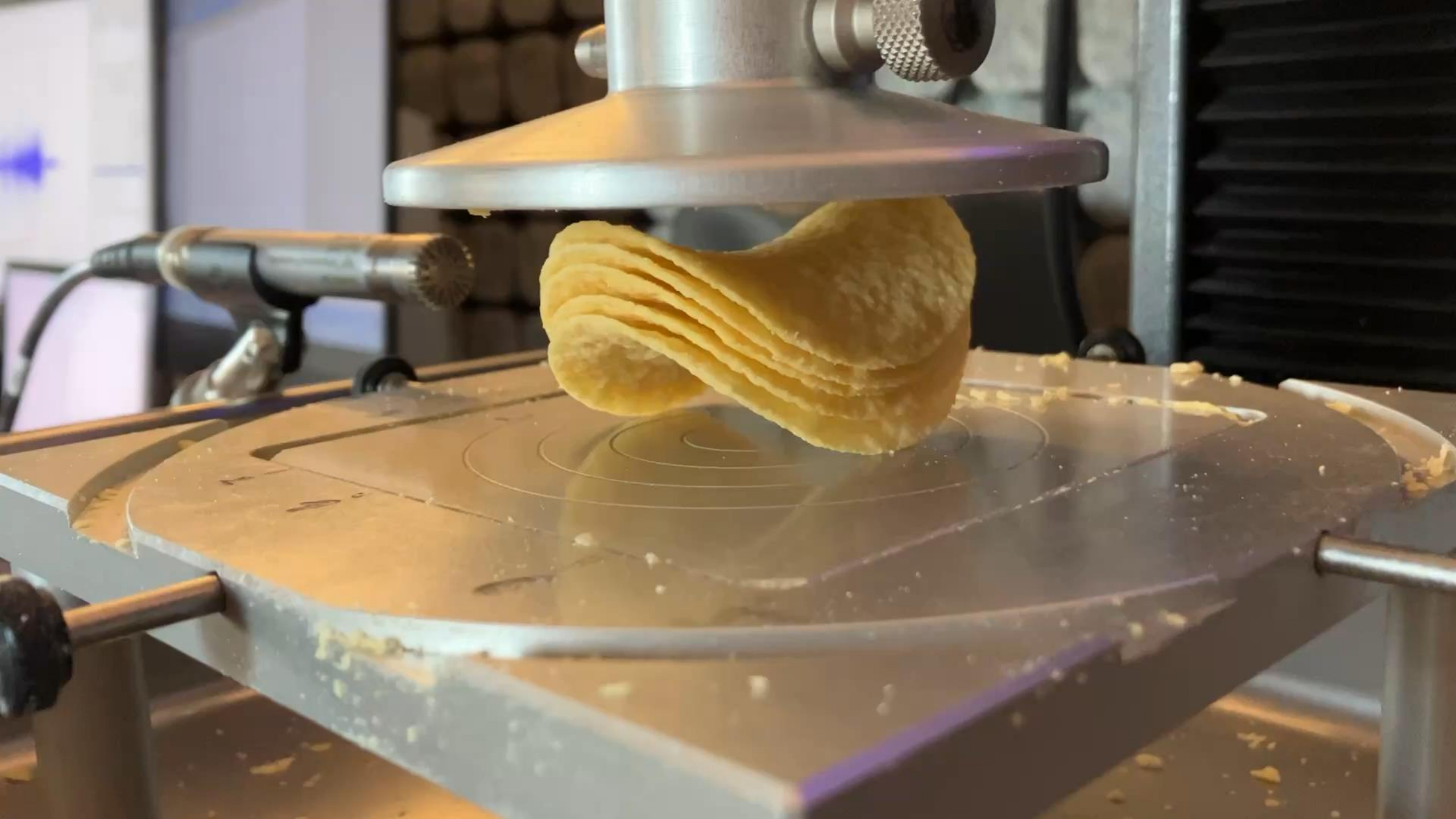
-1-
Chips

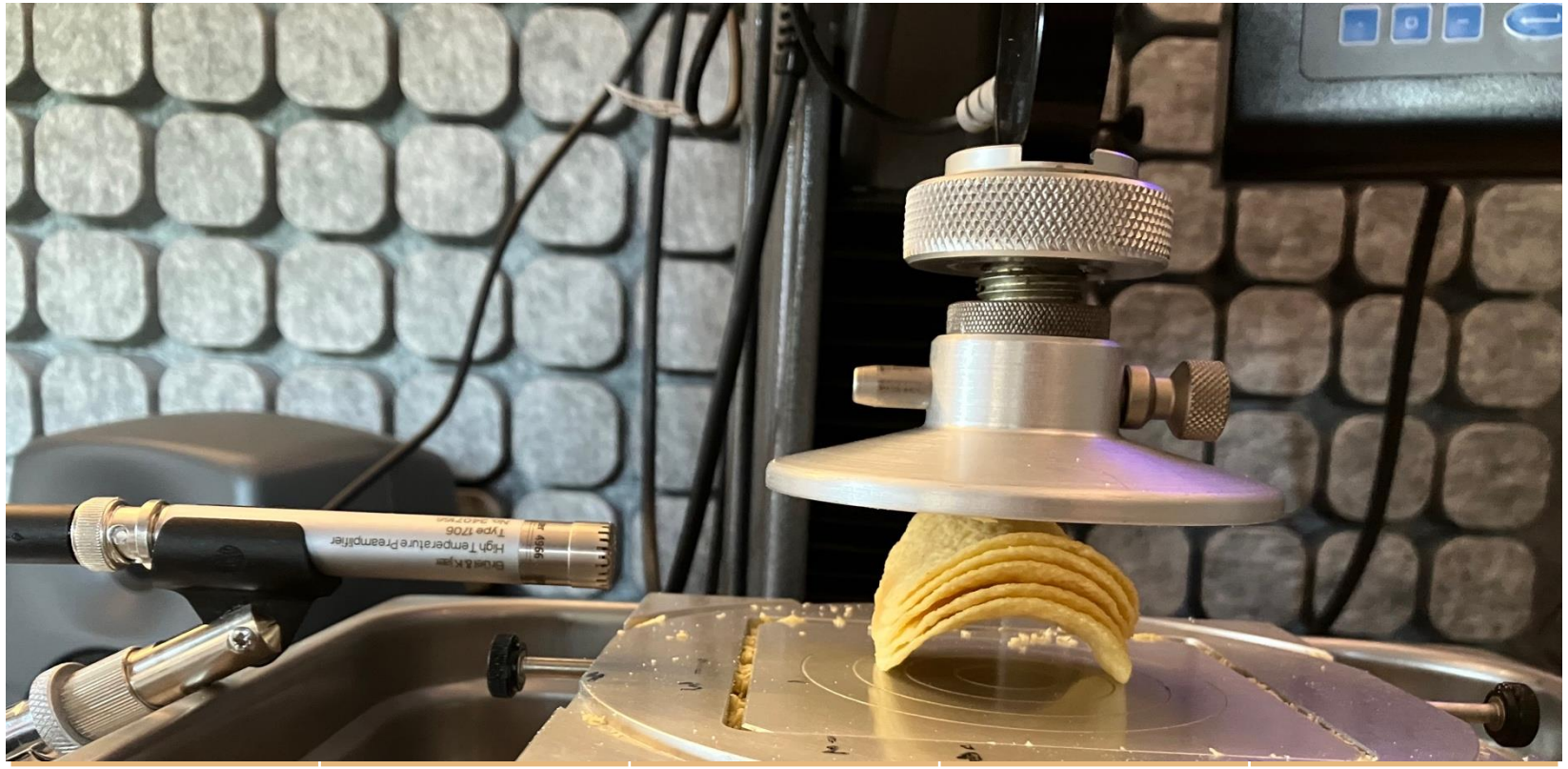


Method:

- Compression Plate (100mm)
- stop test at load of 350N
- 5 chips stacked, concave







Raw	Soft	Reference	Hard	Burnt

5 categories with different ‘levels of hardness/crispiness’

→ already good prediction

DATASET= 995 measurements

RESULTS

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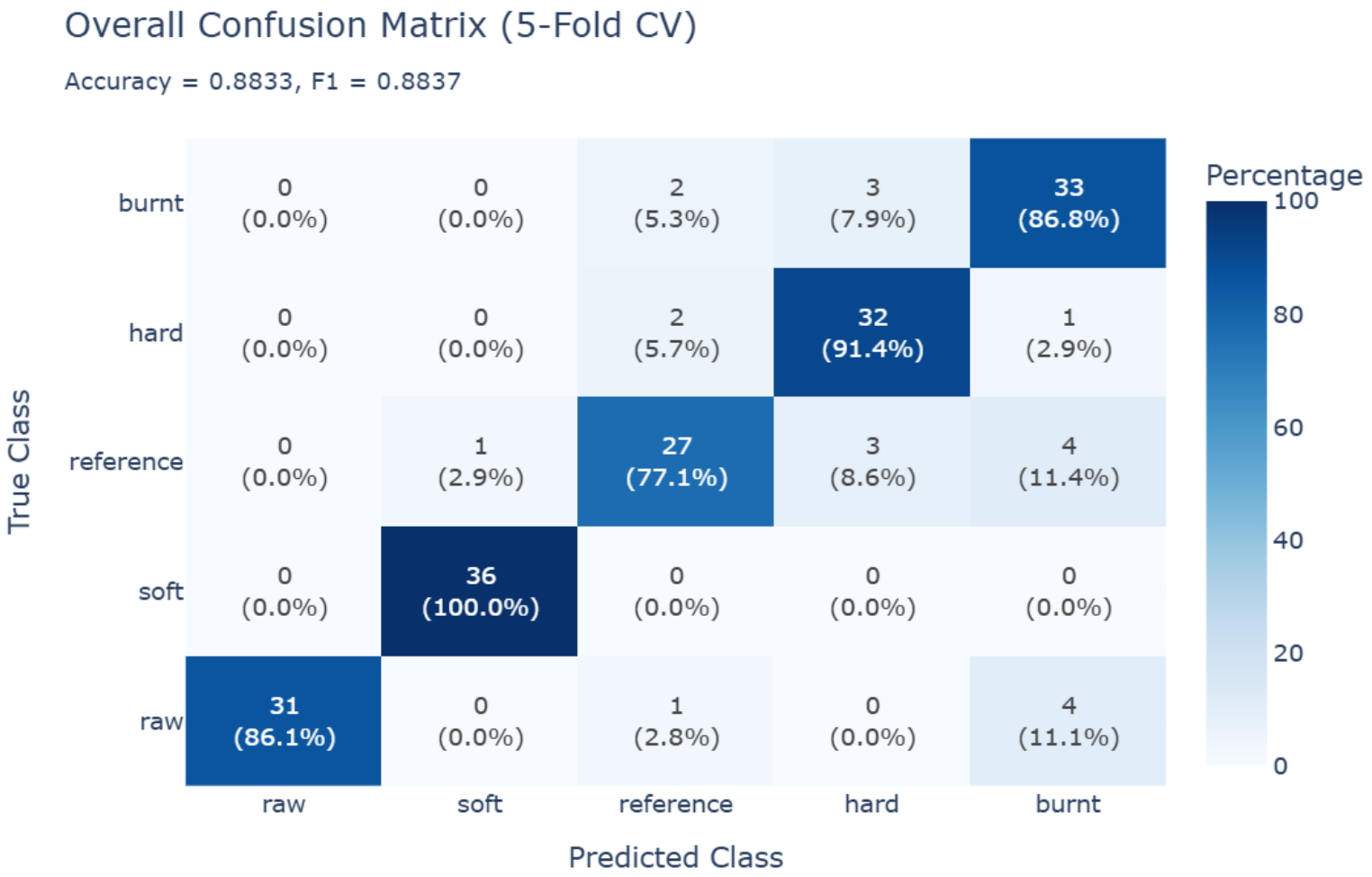
- Baseline method
- More confusion with the reference sample



RESULTS

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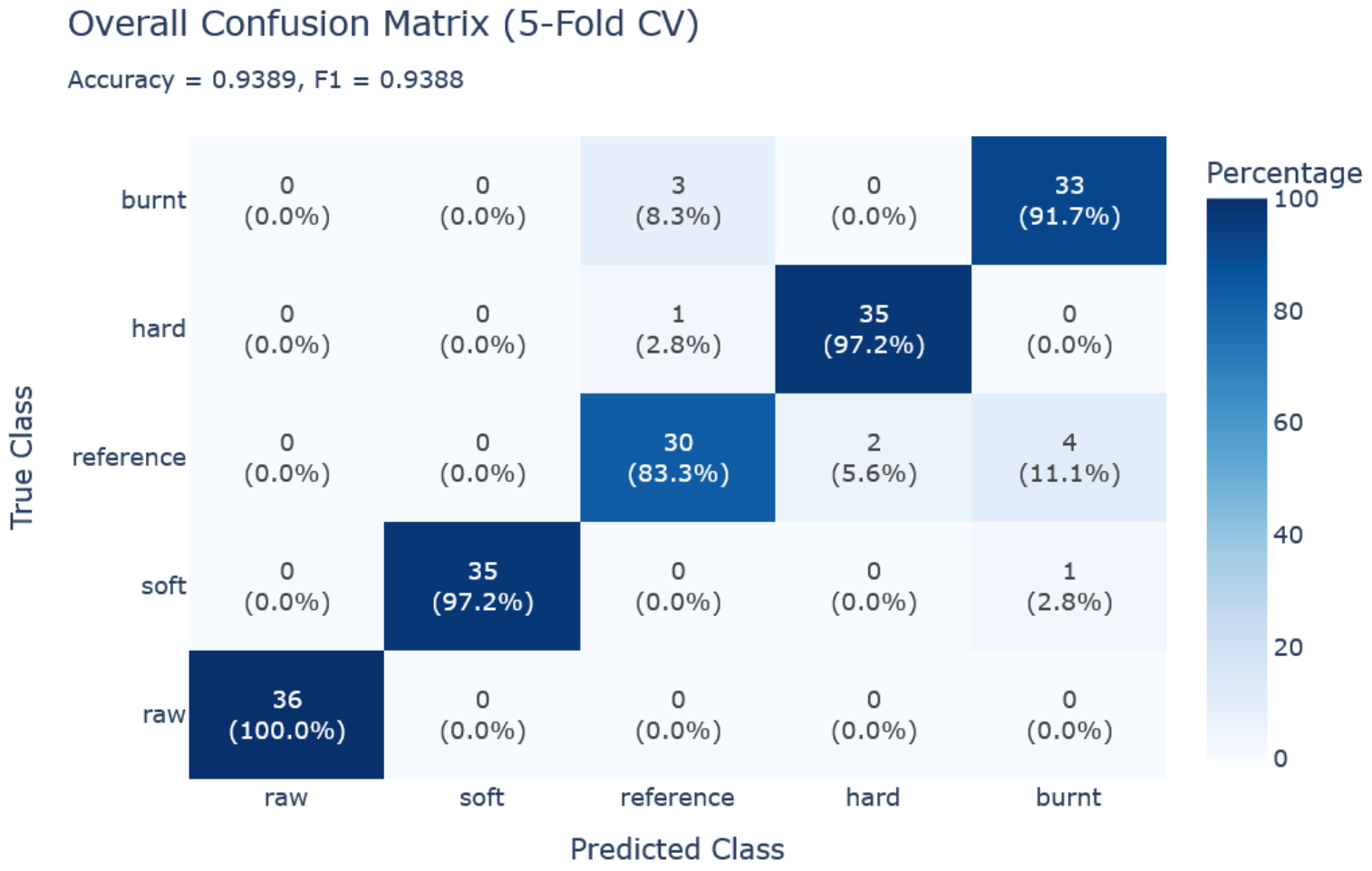
JAN 2025–
DEC 2026

- Tweaking the measurement method

- 1 day of measurements
- Controlled environment
- Still to confirm over different baches
- Field measurement day planned



Next steps

- **Descriptive analysis** & Degree of Difference (DOD) will be done by experts by an **expert panel** in the US

- **Triangle test** with untrained **consumers** (optional)

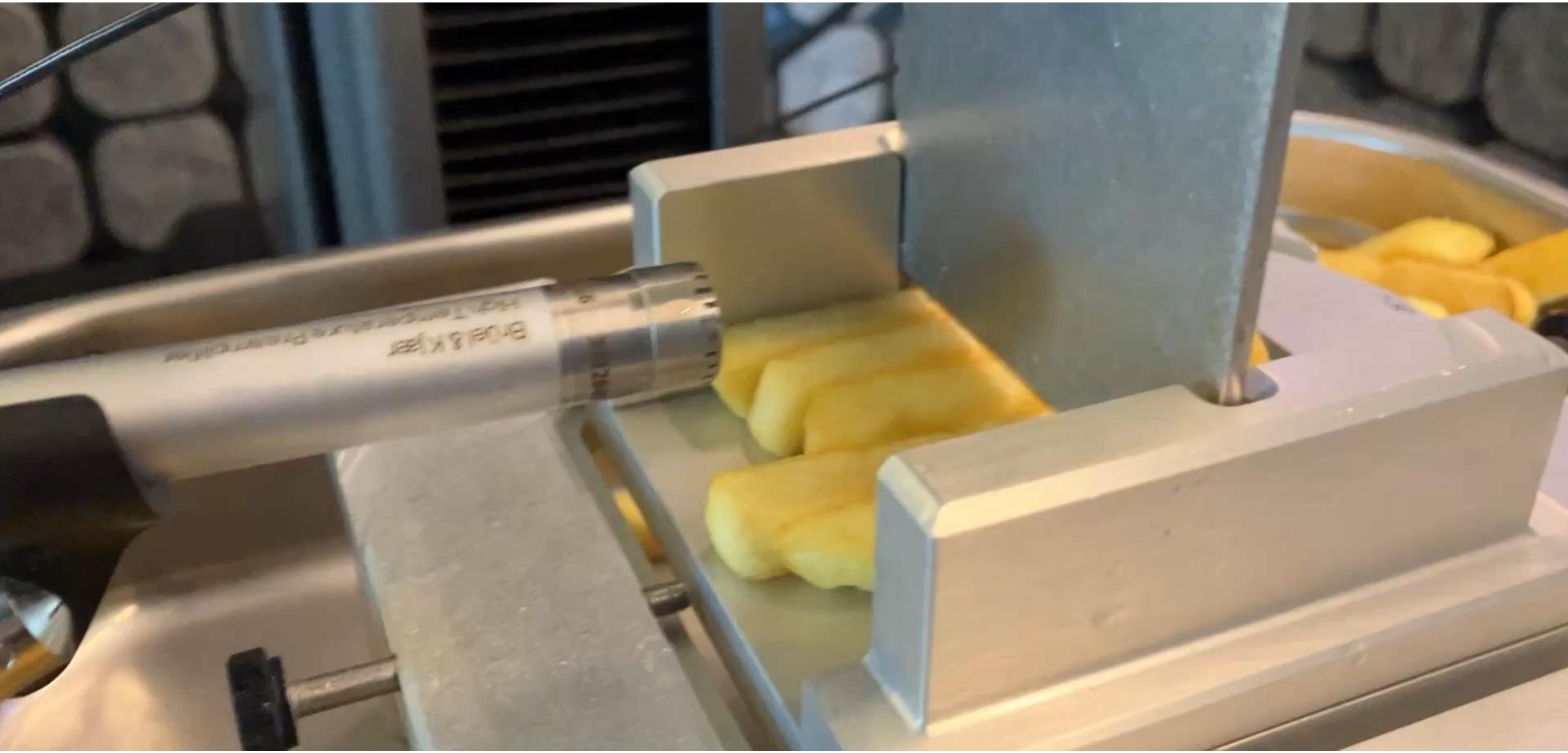
→ **link** with instrumental measurements

- Method & model **robustness check**
  → field recordings on June 25th @ Pringles Mechelen
    - **Lab** conditions
    - Next to **production line**

-2-
French Fries

Method:

- Cut through
- Knife probe (1.75mm)
- Speed: 1 mm/s
- stop test at 10 mm
- 6 fries in a row

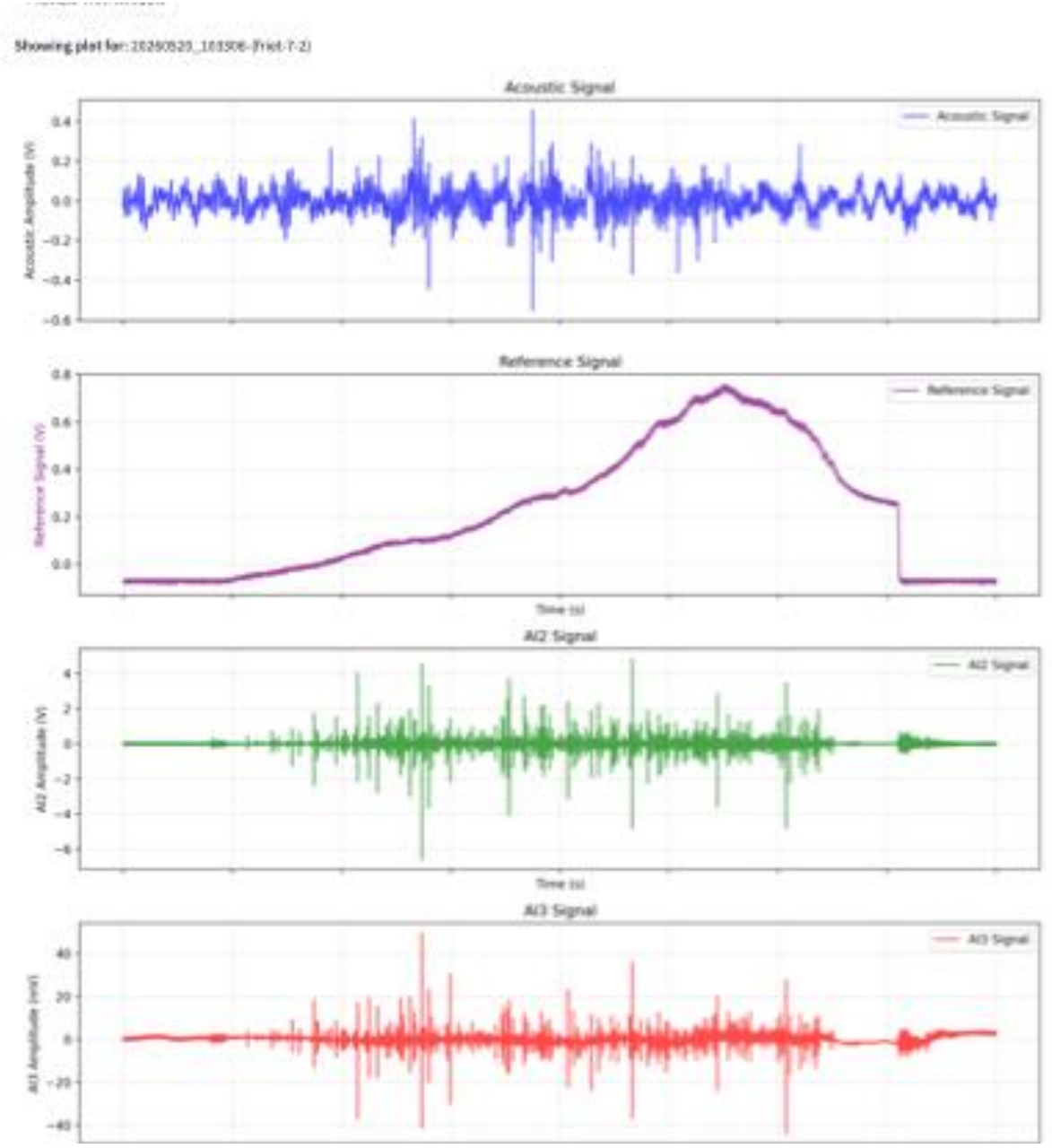


Classification test

- Dry matter is a measure for quality
- Differentiate different batches → classification

Q1: 29,18% vs Q2: 25,70%

- Fried at 180 °C for 4.5 min
- Measured 1.5 min after baking



Classification test with regression

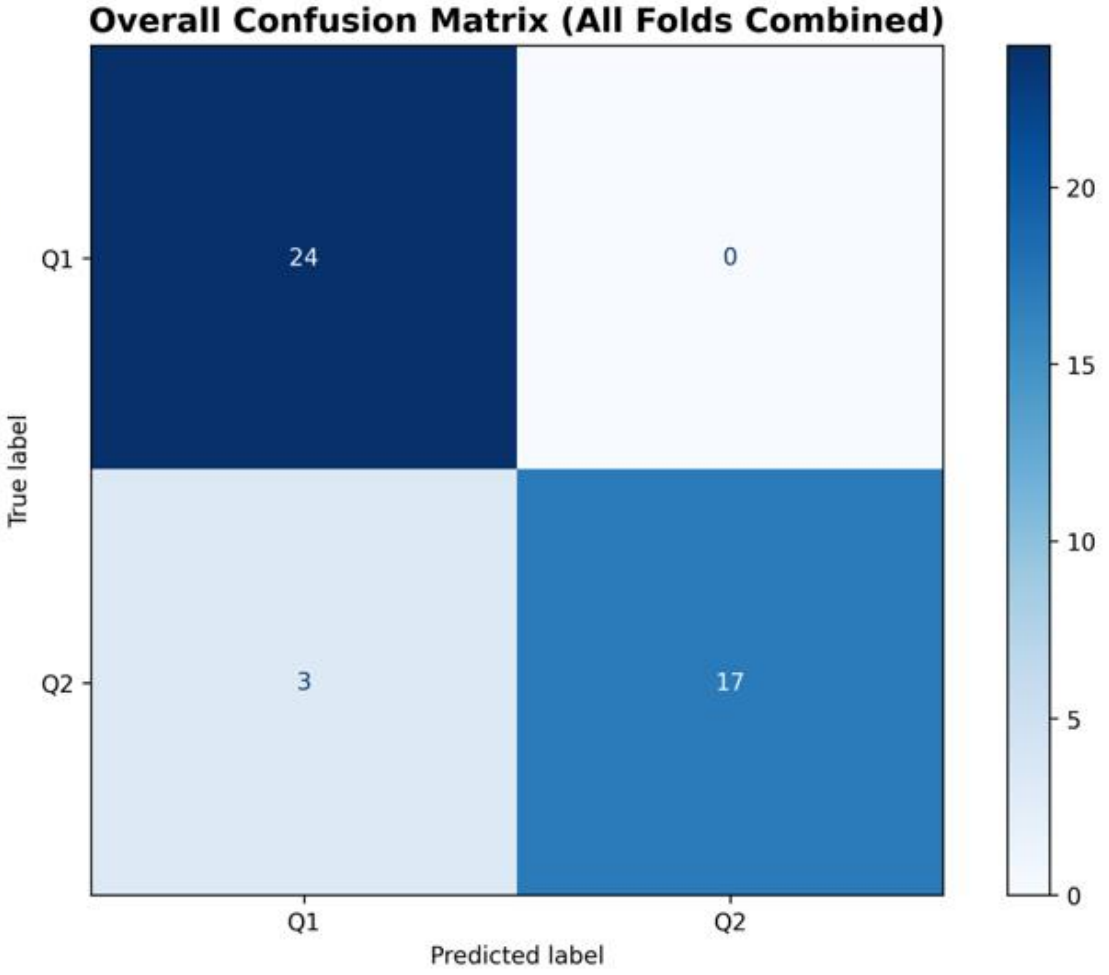
- Dry matter is a measure for quality
- Differentiate three different batches
- Fried at 180 °C for 4.5 min
- Measured 1.5 min after baking

Quality	Q1	Q2	Q3
Sensory Evaluation	Most crispy		Least crispy
Price	€€€	€€	€
Underwater weight	400-420 (DS = 21.67 - 22.66%)	400-420 (DS = 21.67 - 22.66%)	400-420 (DS = 21.67 - 22.66%)
Dry matter (after prefry)	31,36%	29,75%	28,89%

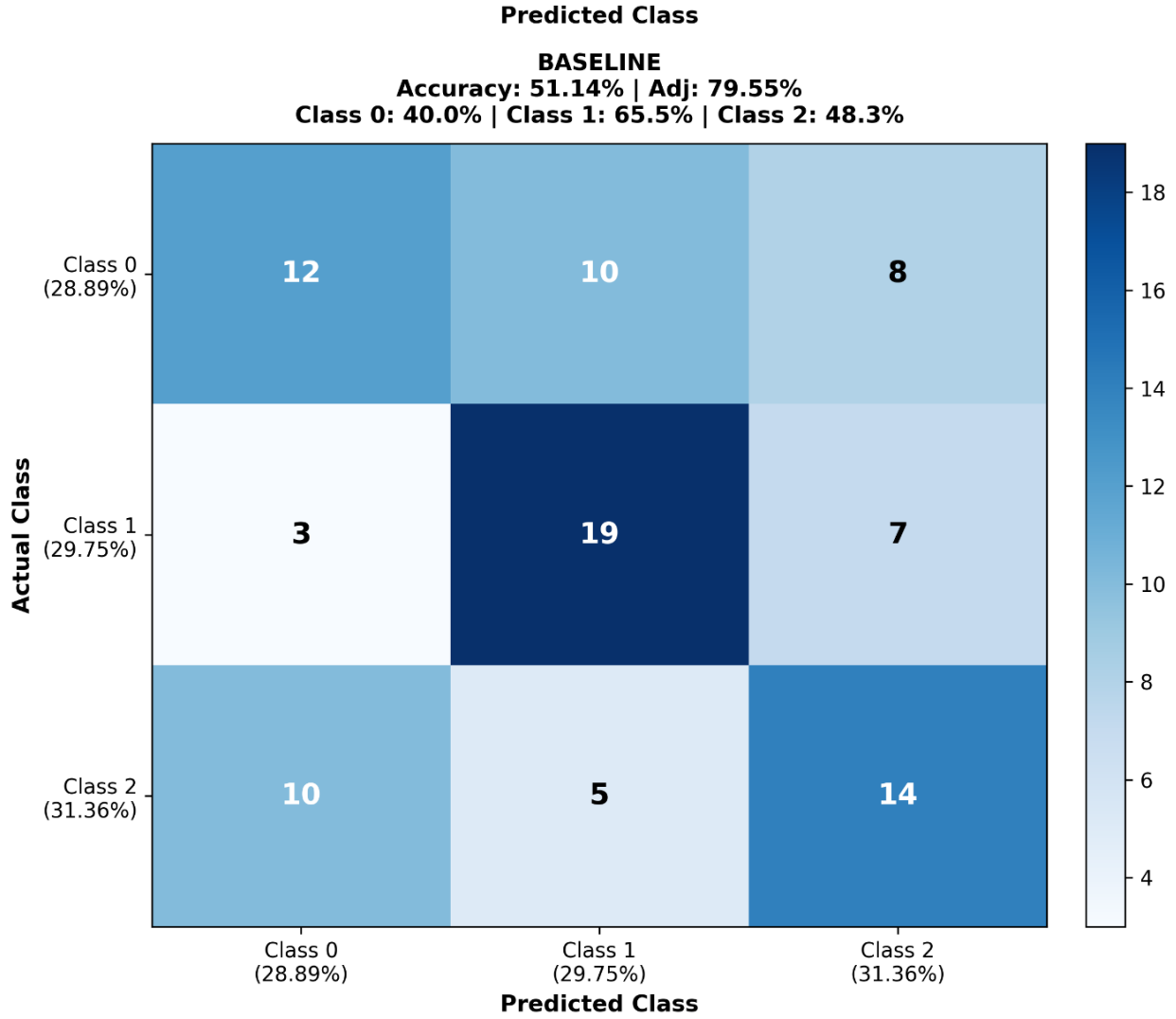
Results: classification test

- Dry matter is a measure for quality
- Differentiate different batches → classification

Q1: 29,18%
vs
Q2: 25,70%



Results: classification test Q1, Q2, Q3

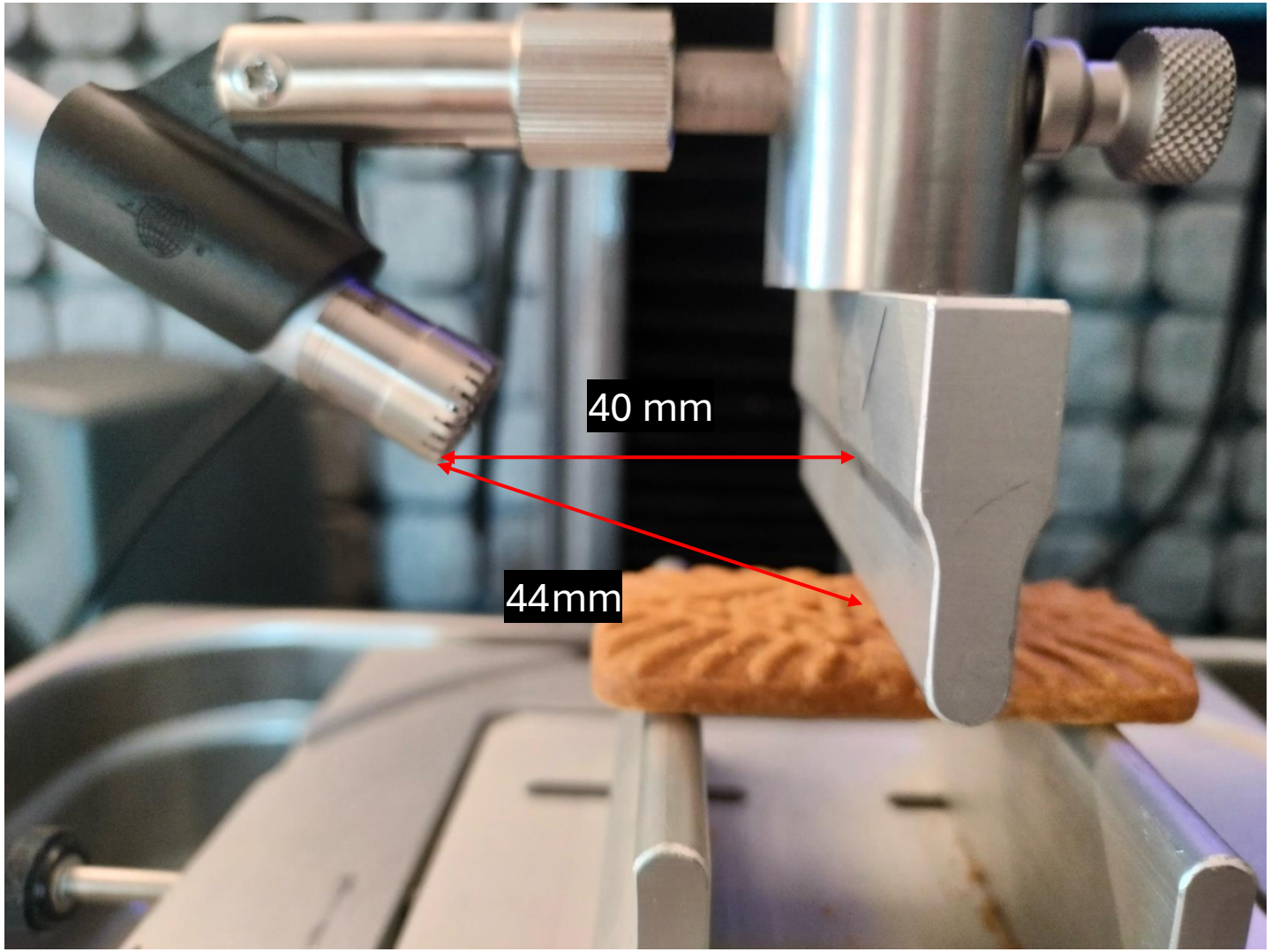


Next steps

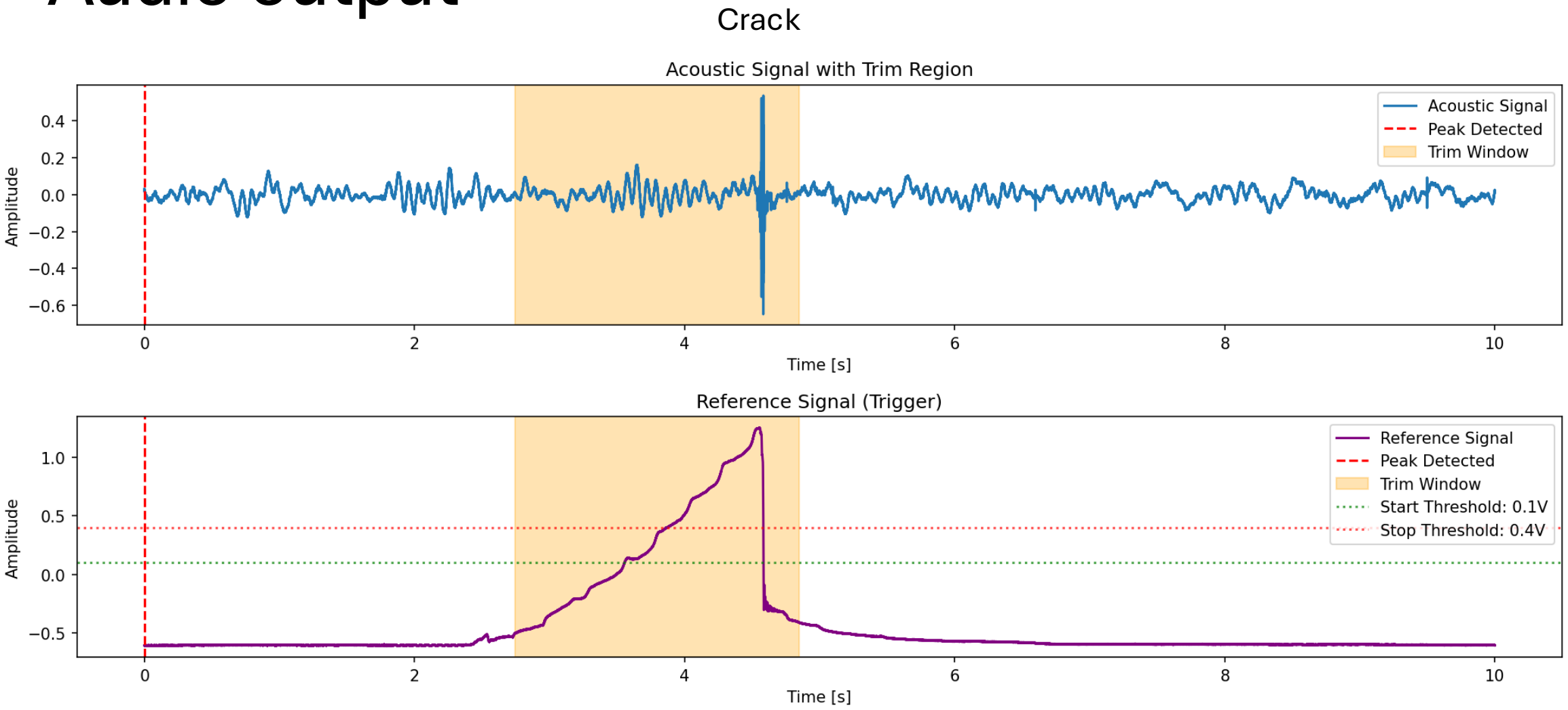
- Crushing experiments, more sample area, optimise setup, new probes
- Collect sensory data to link with instrumental measurements

-3-
Cookies

Setup 1.0



Audio output



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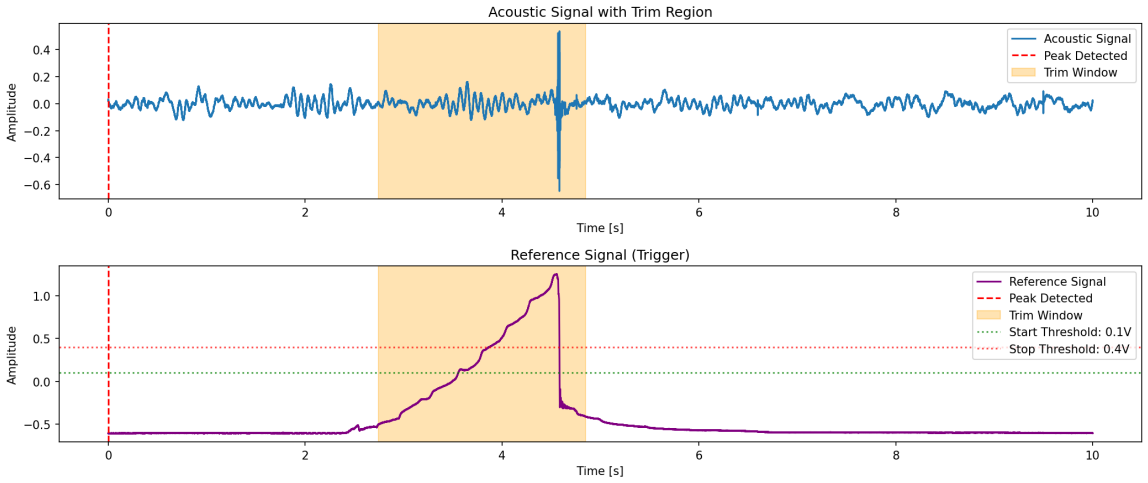
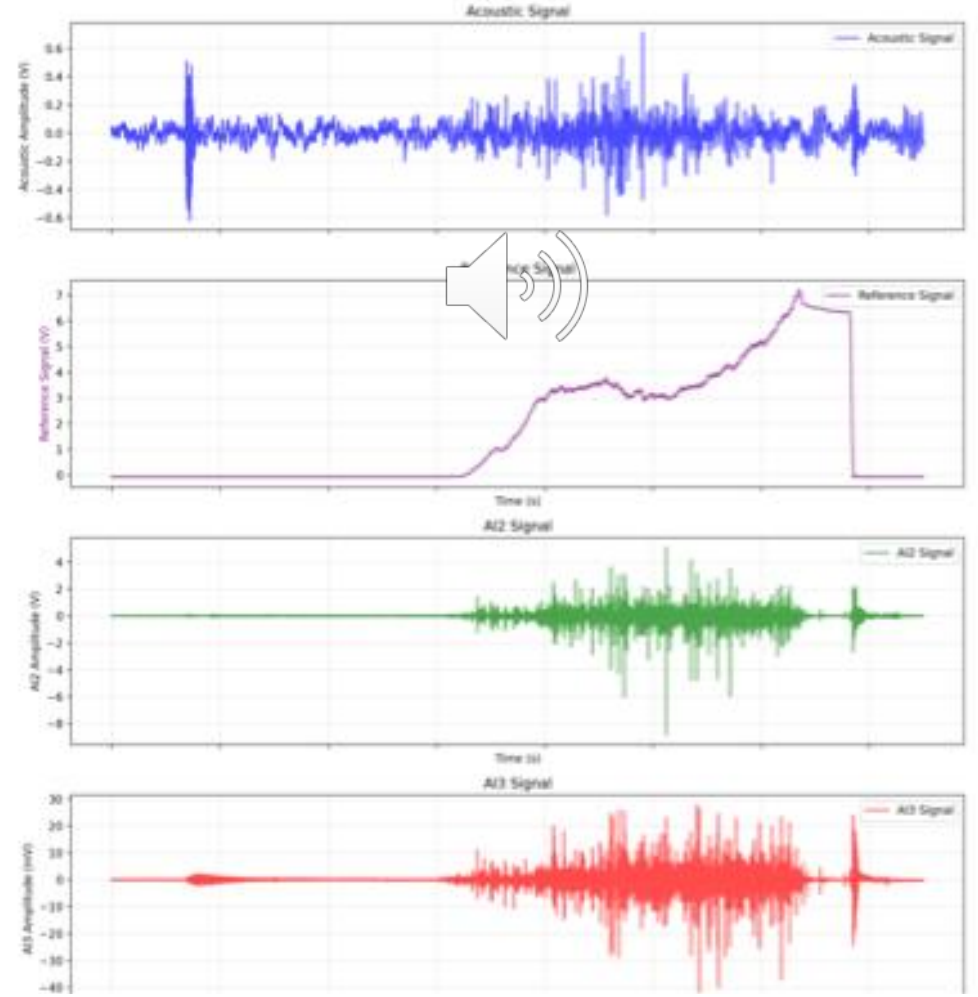
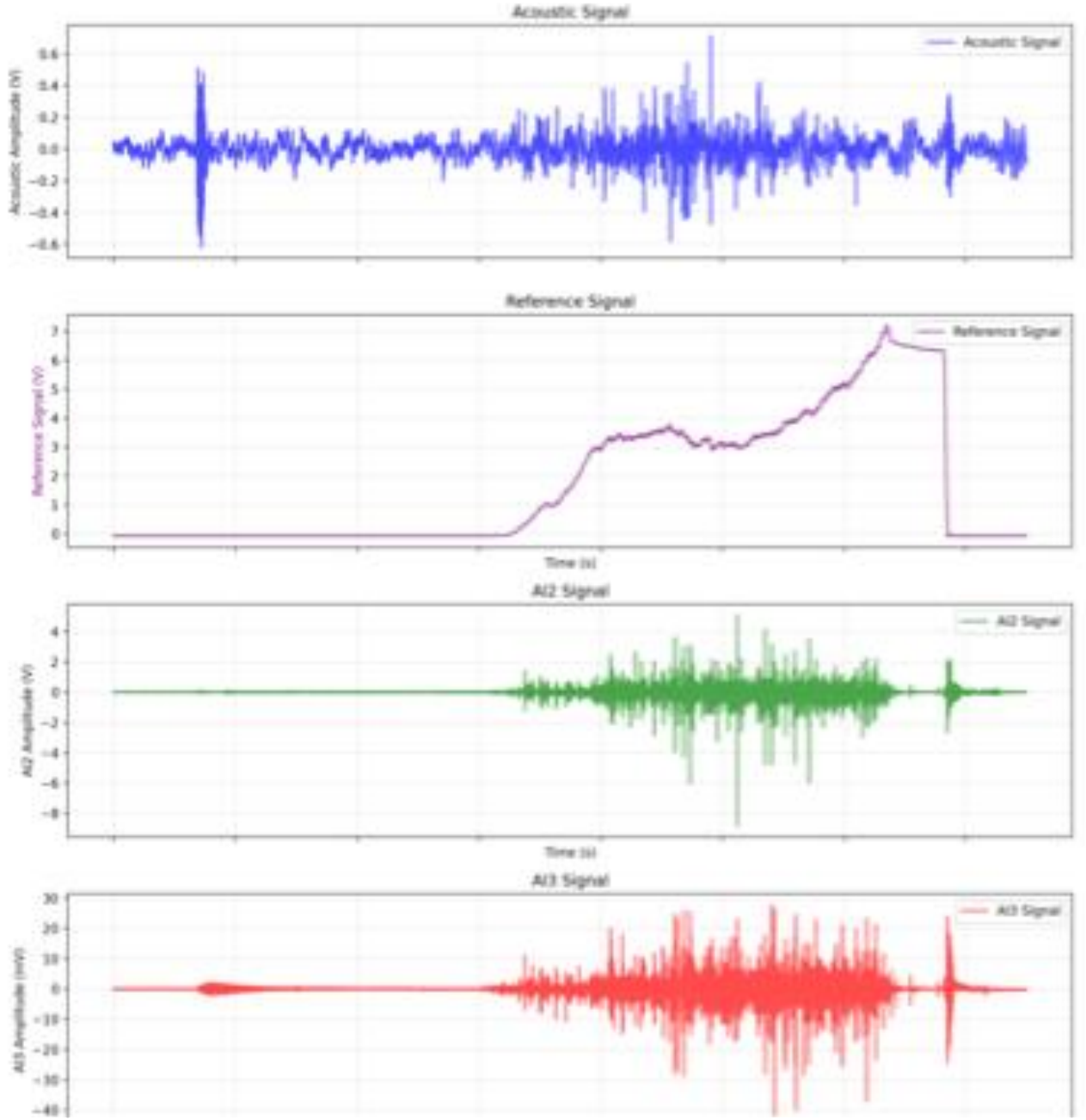
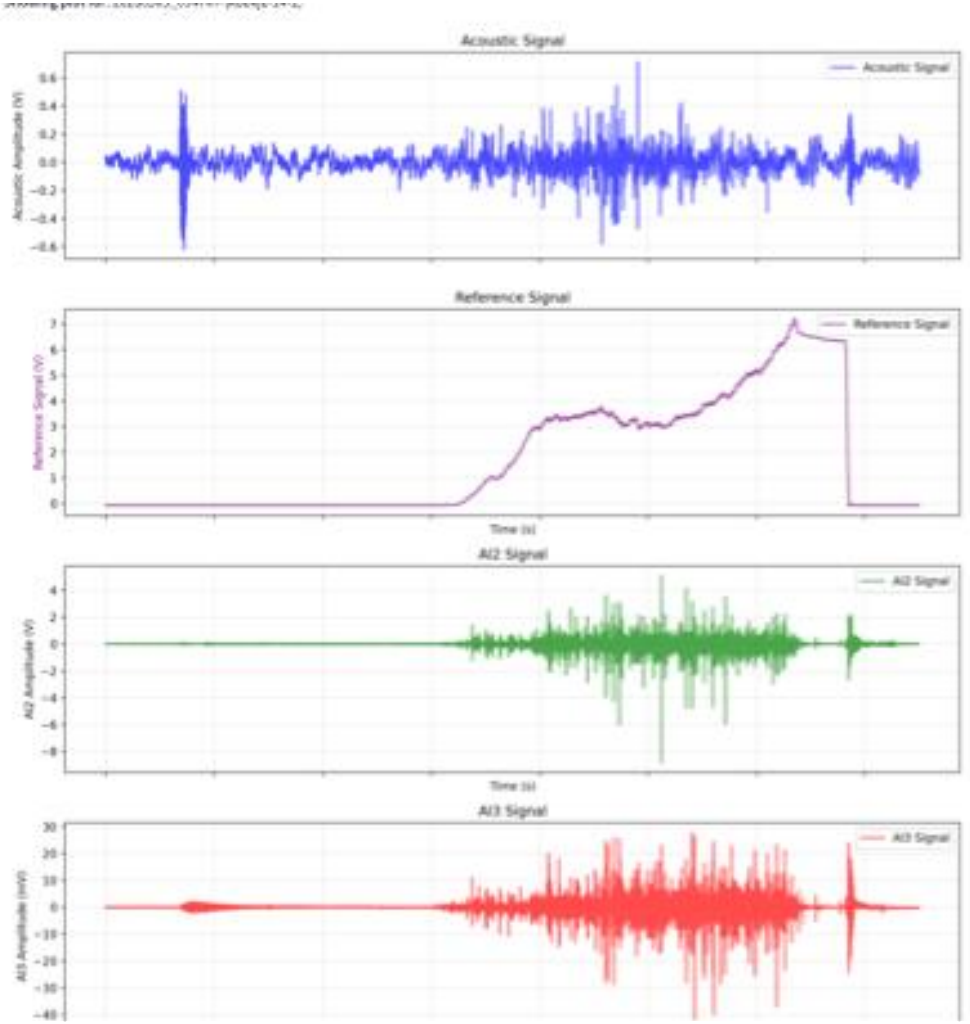
From crack



to crush




Acoustic Signal
Acoustic Signal
Acoustic Amplitude (V)
Reference Signal
Reference Signal
Reference Signal (V)
Time (s)
AI2 Signal
AI2 Signal
AI2 Amplitude (V)
Time (s)
AI3 Signal
AI3 Signal
AI3 Amplitude (mV)



to crush

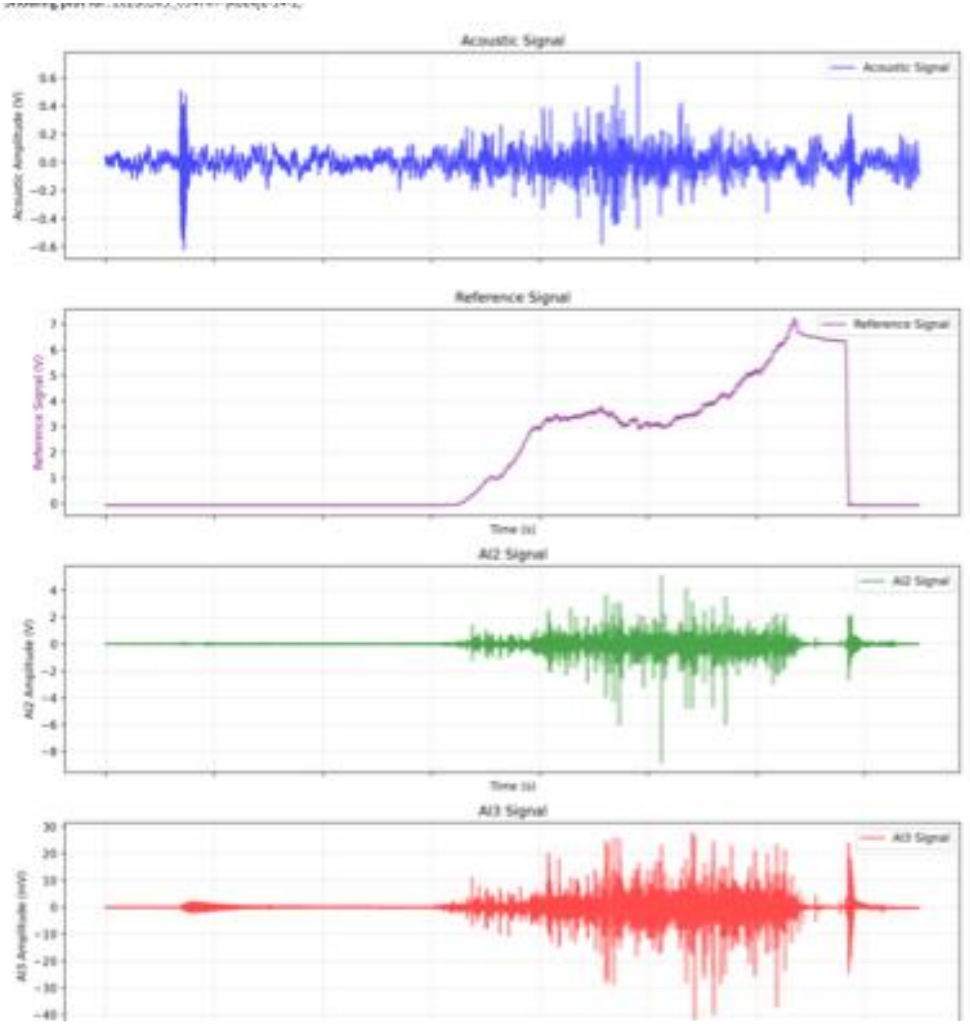
KRAK
OP ZOEK NAAR DE PERFECTE CRUNCH

JAN 2025–
DEC 2026

Method:

- Crushing probe
- Speed: 1mm/s
- Stop at load 480N

- Moisture content measured
  - Sartorius
  - Drying oven
- Time out of package registered



to crush

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JAN 2025–
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Method:

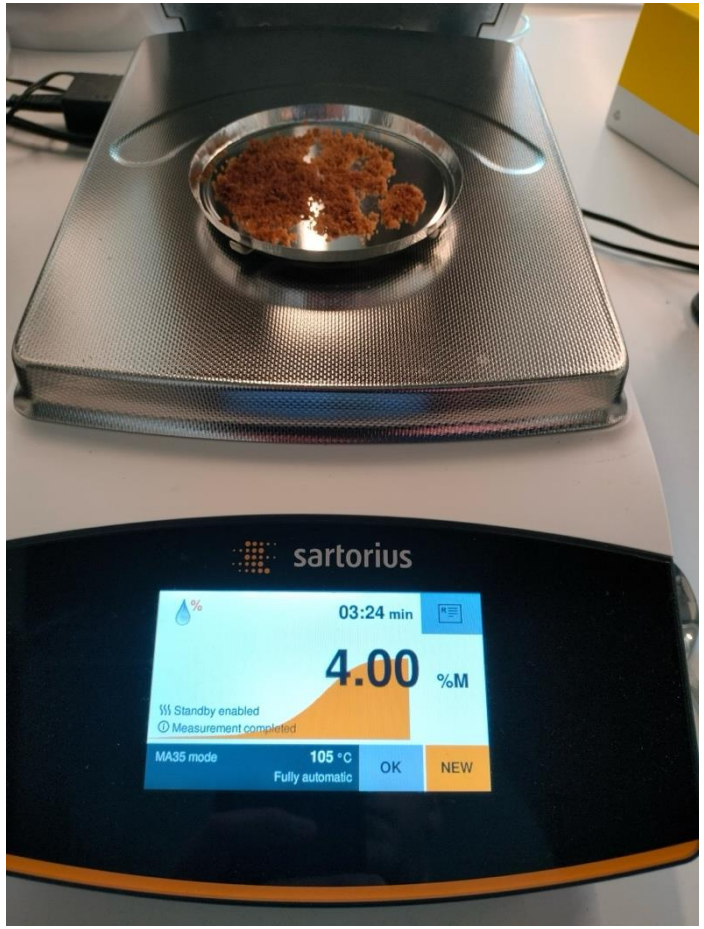
- Crushing probe
- Speed: 1mm/s
- Stop at load 480N

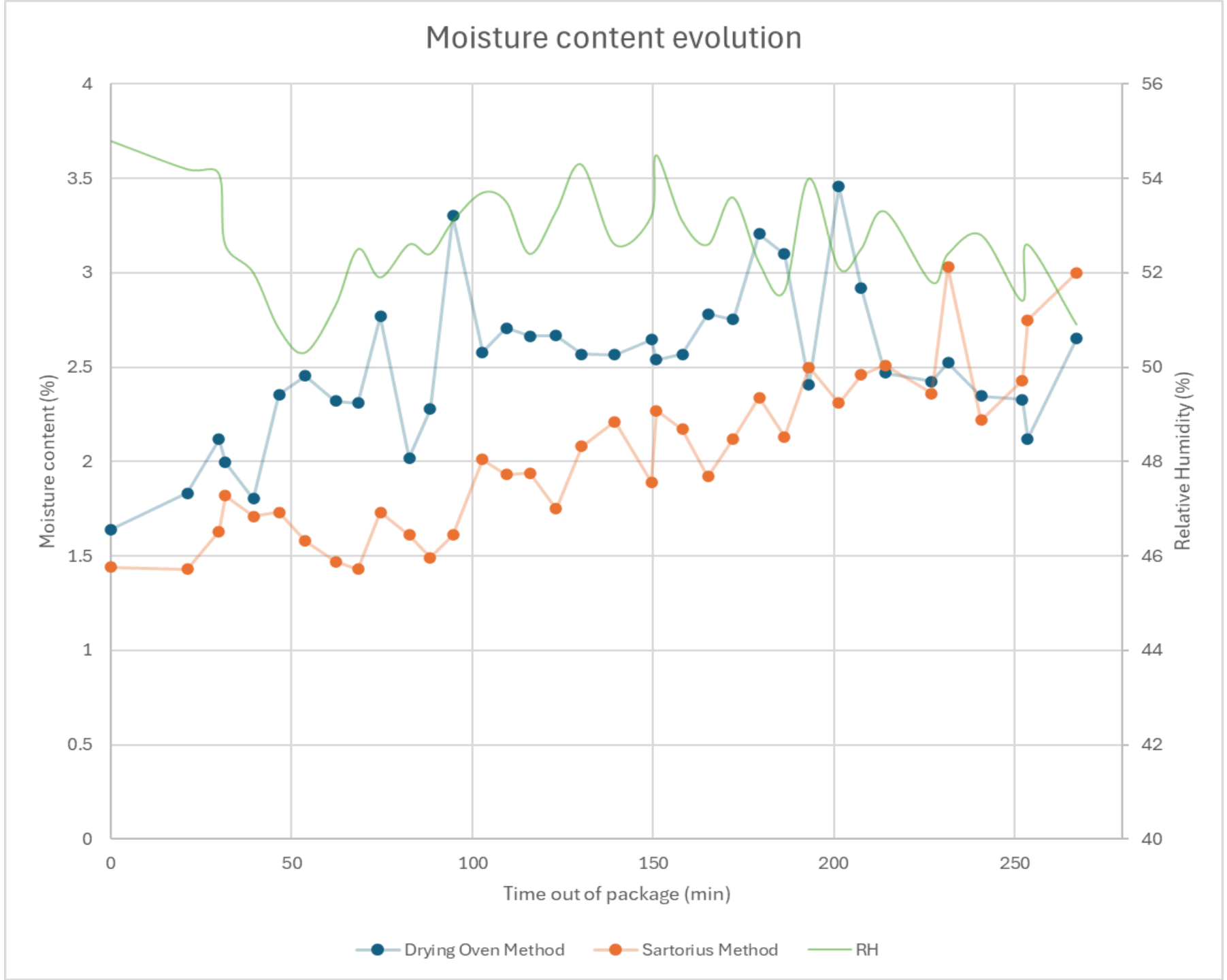
- Moisture content measured
  - Sartorius
  - Drying oven
- Time out of package registered

Correlate with sensory data

Moisture content evolution

- Moisture content measured, 0-6h after opening
- Open air (RH = 50-55%, T= 21-22°C)
- Drying oven (103 °C, until constant weight, ISO 6496)
- Sartorius MA35 mode (105°C)

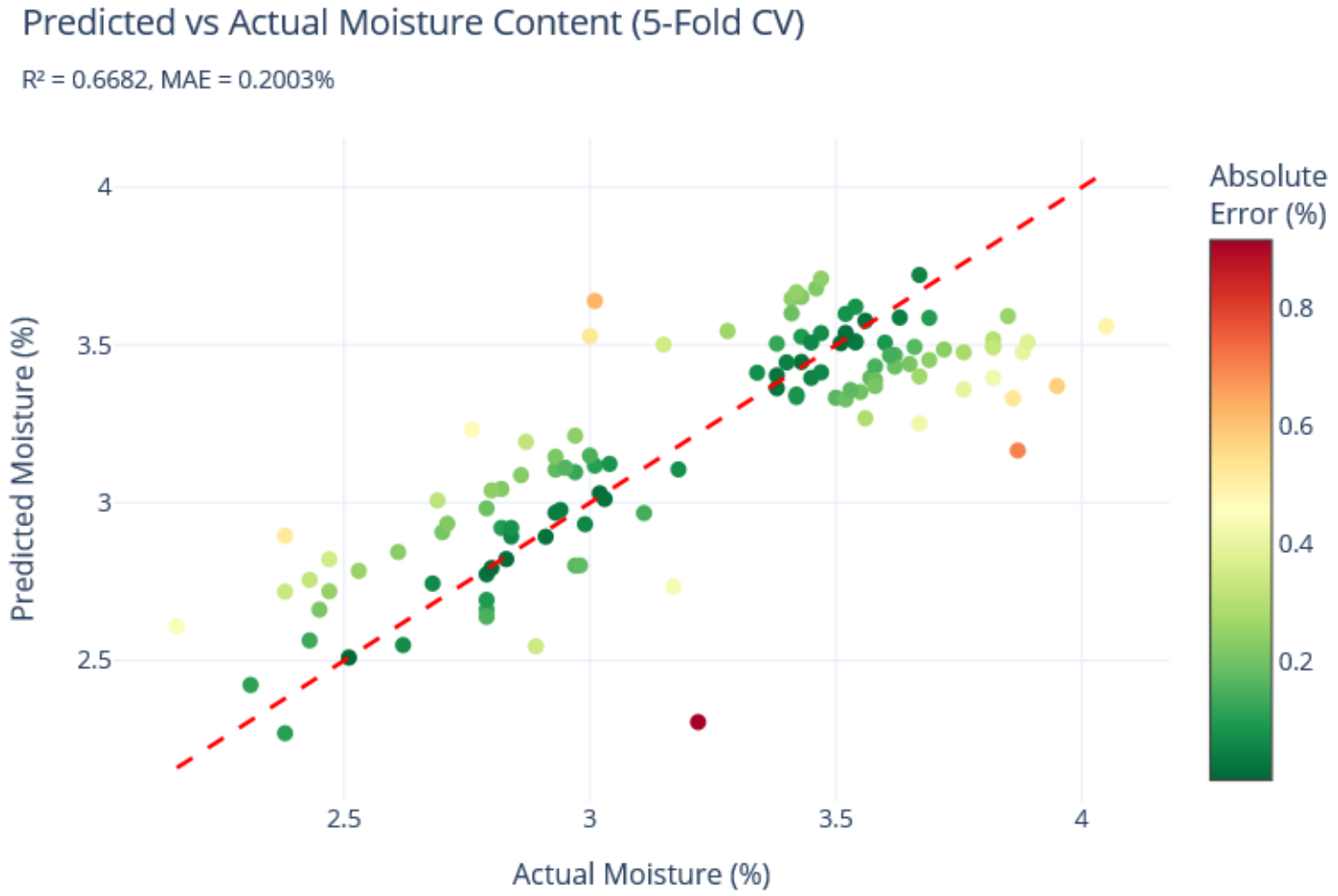



Moisture content evolution
Moisture content (%)
Relative Humidity (%)
Time out of package (min)
0
0.5
1
1.5
2
2.5
3
3.5
4
40
42
44
46
48
50
52
54
56
0
50
100
150
200
250
Drying Oven Method
Sartorius Method
RH

Machine learning

3. Results

- Moisture
- Predicted vs True



Machine learning

KRAK
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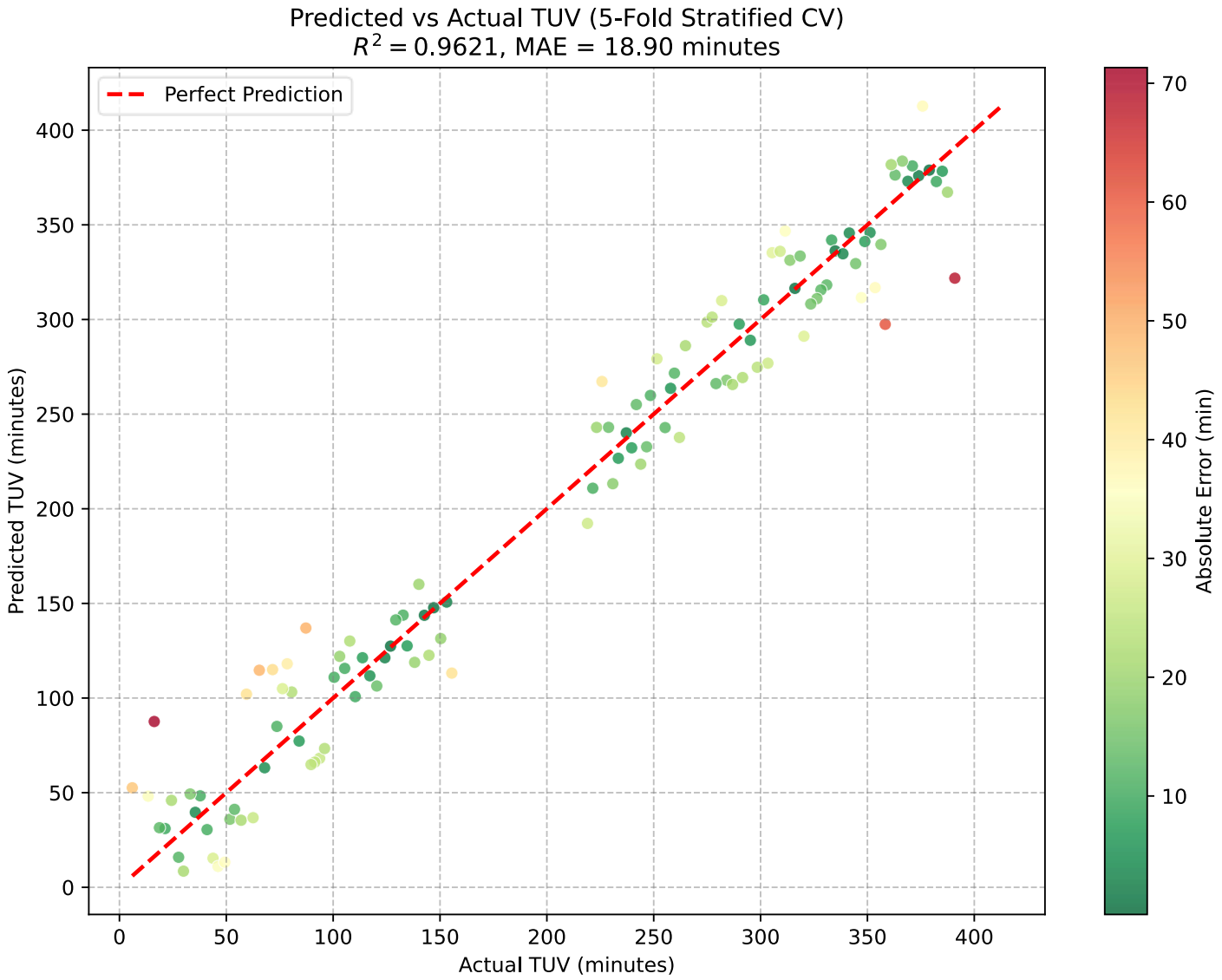
JAN 2025–
DEC 2026

3. Results

- Time out of package
- Predicted vs True
- Same featureset
- Same machine learning model

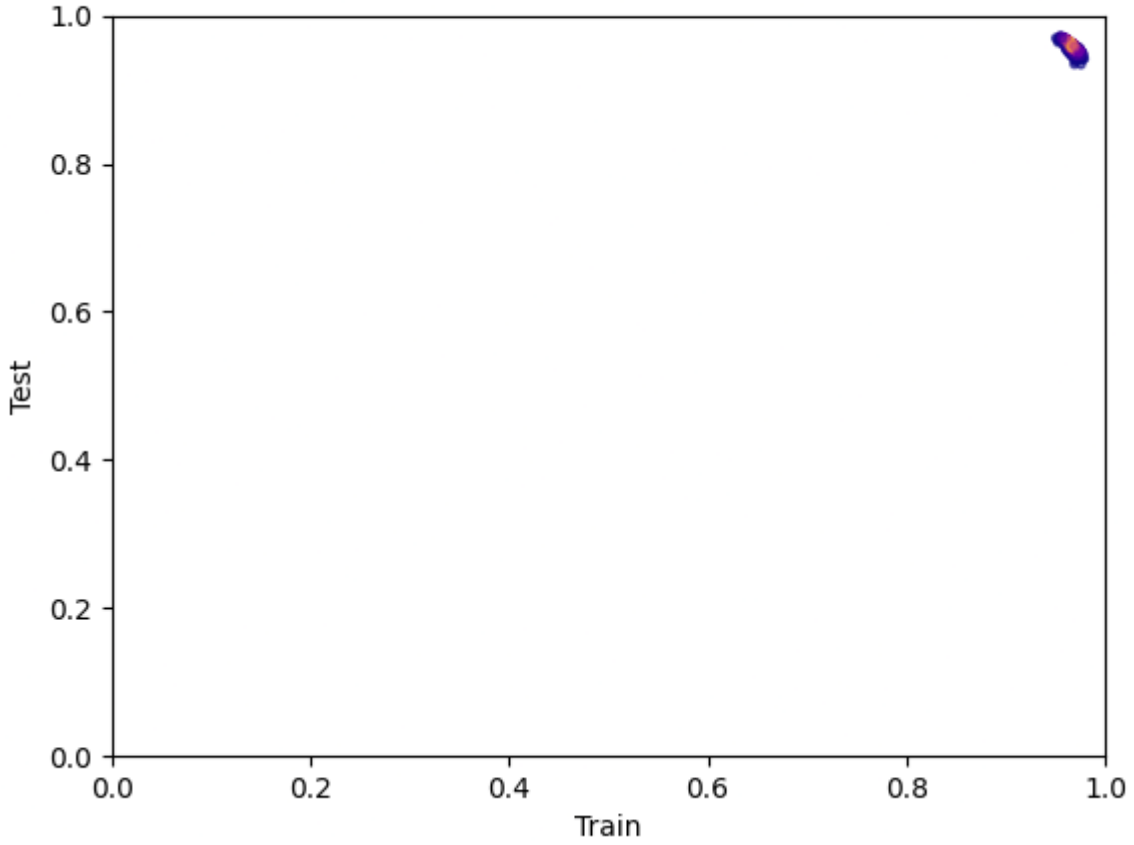


Cookies

Machine learning

3. Results

- Time out of Package
- R^2 Test vs Train
- 1000 repeats with different train/test subsets
- Only 1 feature used!
  - LFCC feature: FFT size 256 samples (3ms)
  - => transients detecteren



Next steps

- Accelerate shelf-life testing using a climate chamber with **controlled relative humidity** condition (**0–6% moisture** exposure levels)
- **Sensory scoring** of different stages linked to moisture content & identify critical quality thresholds

- Building a model with this data

-4-
Bread
(Baguette)

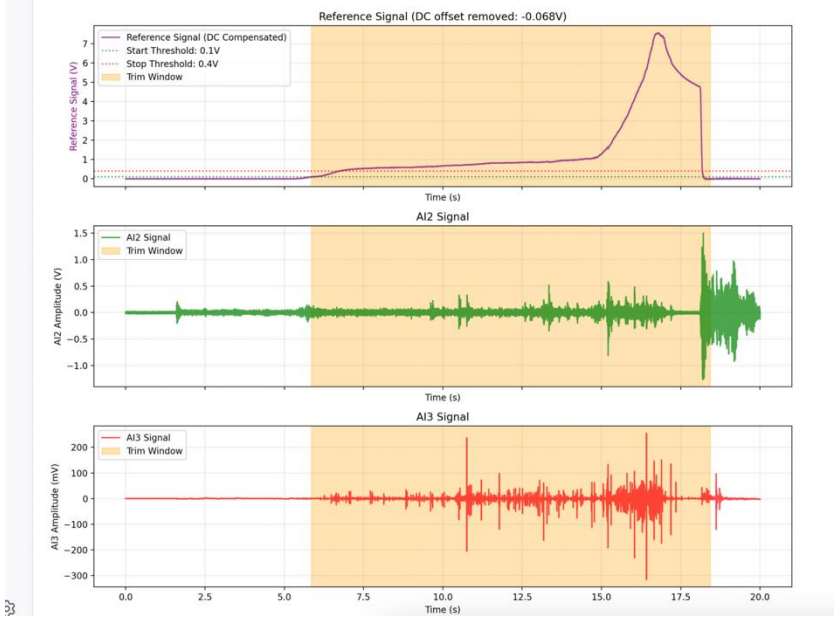
Method:

- Baking 15 min @ 180°C
- Open air cooling and resting
- T = 21 ± 1°C
- RH = 50 ± 2%
- Measurements during 6h after baking

Texture Analysis & Audio

- Crushing with V-squeeze probe
  → Baguette positioned sideways
  → 10 cm of center measured
- Speed: 4 mm/s
- Extension: 45 mm

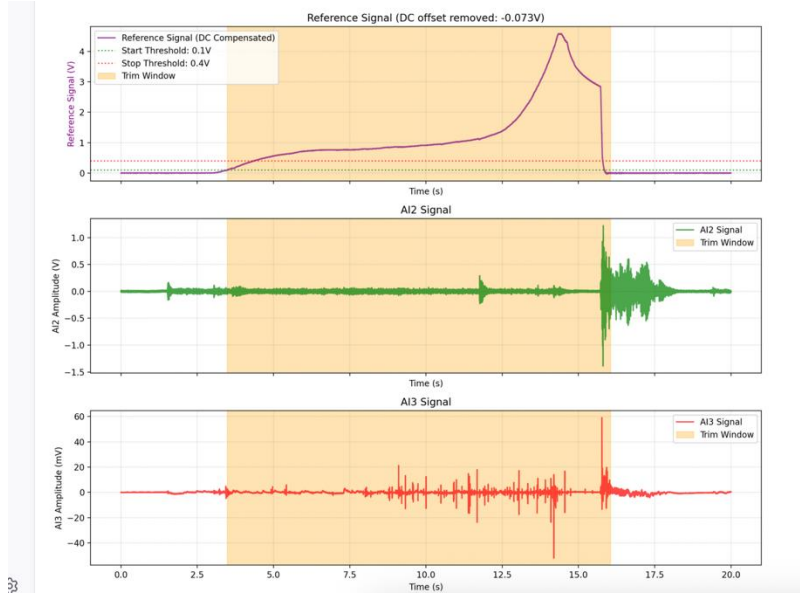
Dataset: 459 measurements



Time after baking

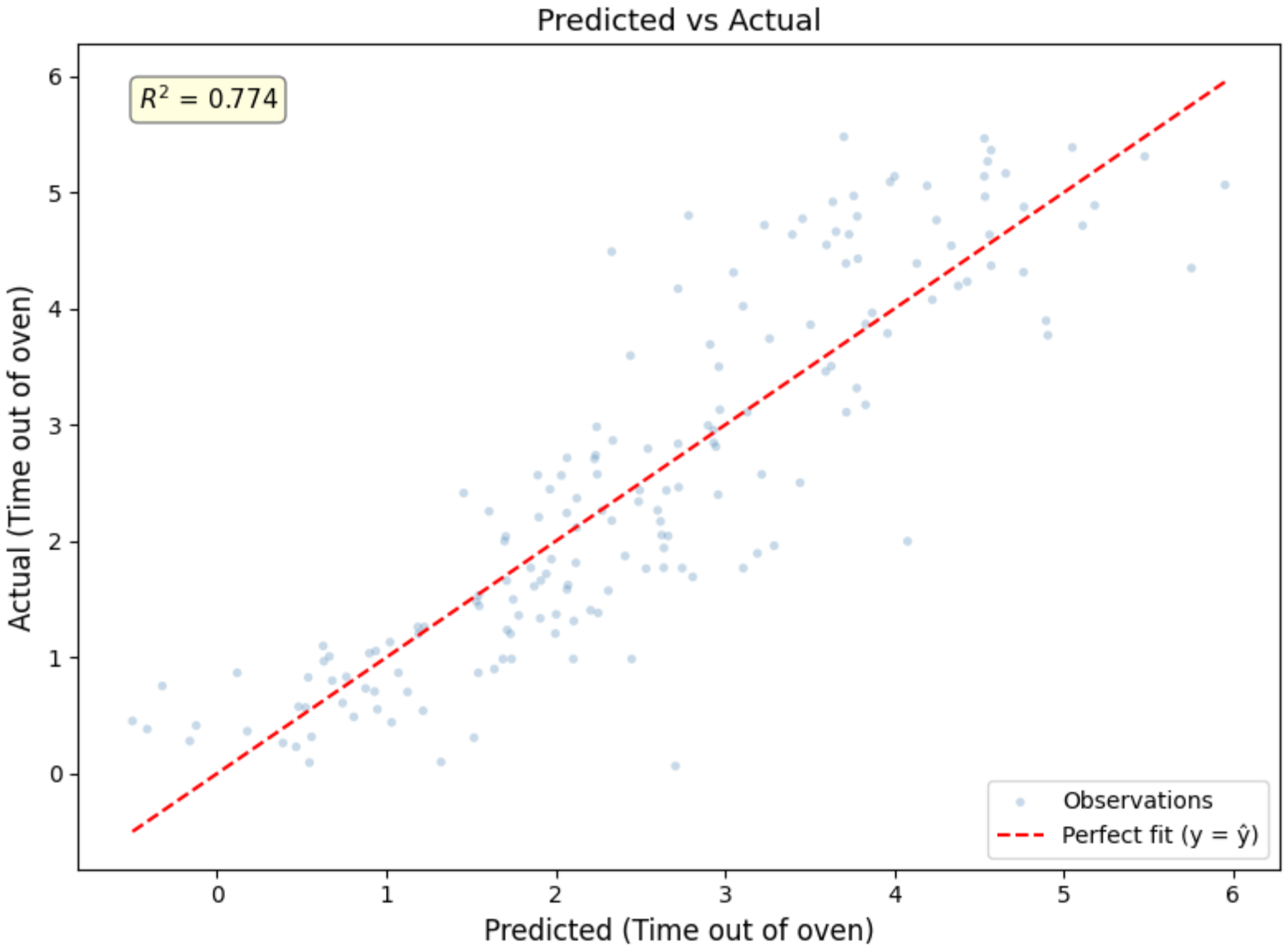
T = 21 ± 1°C

RH = 50 ± 2%



30 min

6 h


Predicted vs Actual
R^2 = 0.774
Actual (Time out of oven)
Predicted (Time out of oven)
Observations
Perfect fit (y = ŷ)
0
1
2
3
4
5
6

t

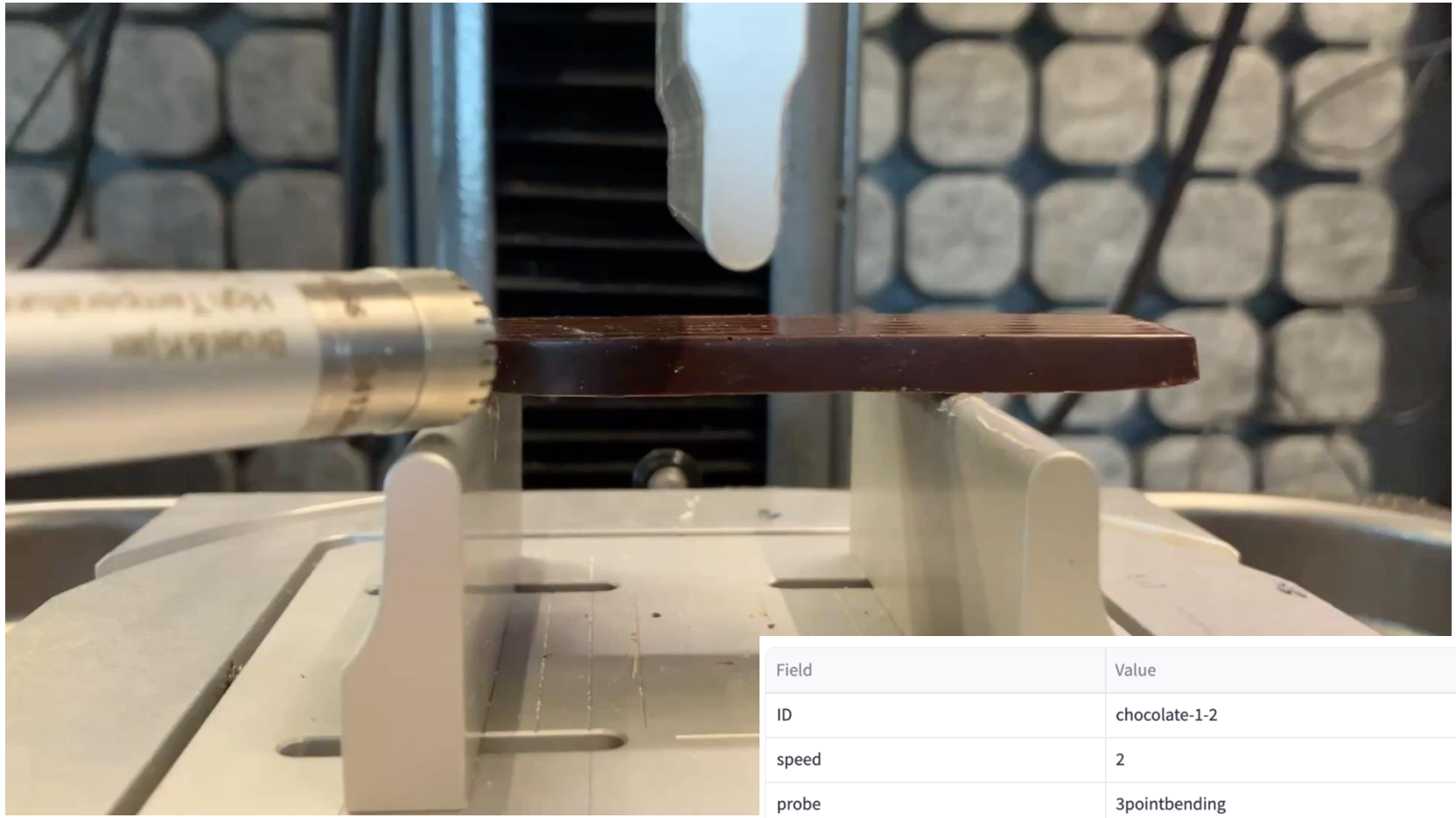
Top 5 Features

#	Feature
01	PP_PN_avg_formant_bandwidth_band5k_10000_15000_AI0_PN
02	PP_PN_mid_high_freq_ratio_band5k_15000_20000_AI0_PN
03	PP_PN_b4_mean_antialiasing_32khz_AI0_PN
04	PP_PN_f1_mean_band5k_5000_10000_AI0_PN
05	PP_PN_burst_interval_cv_antialiasing_32khz_AI0_PN

Next steps

- Crushing test with probe crushing almost whole bread
- Collection of sensory data?

-5-
Chocolate



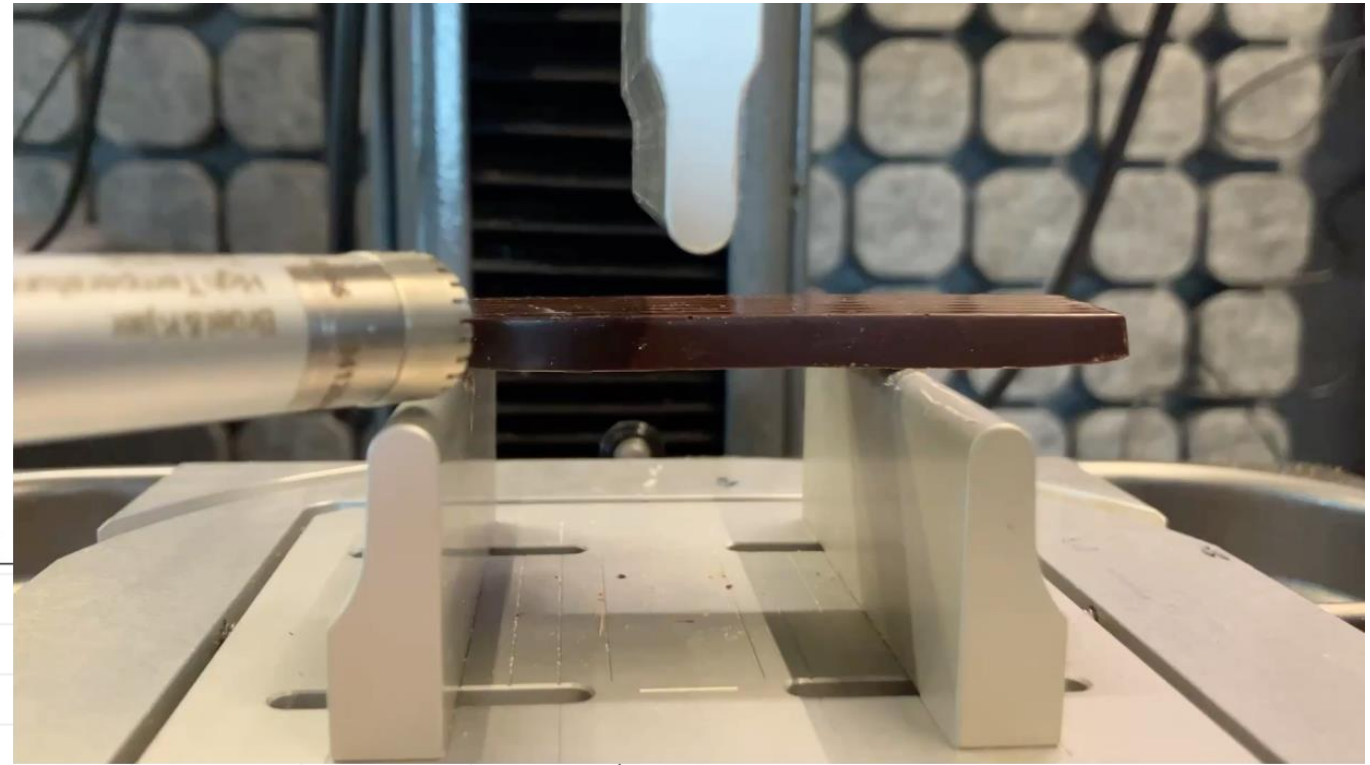
- Size 102x23x10mm

TA settings

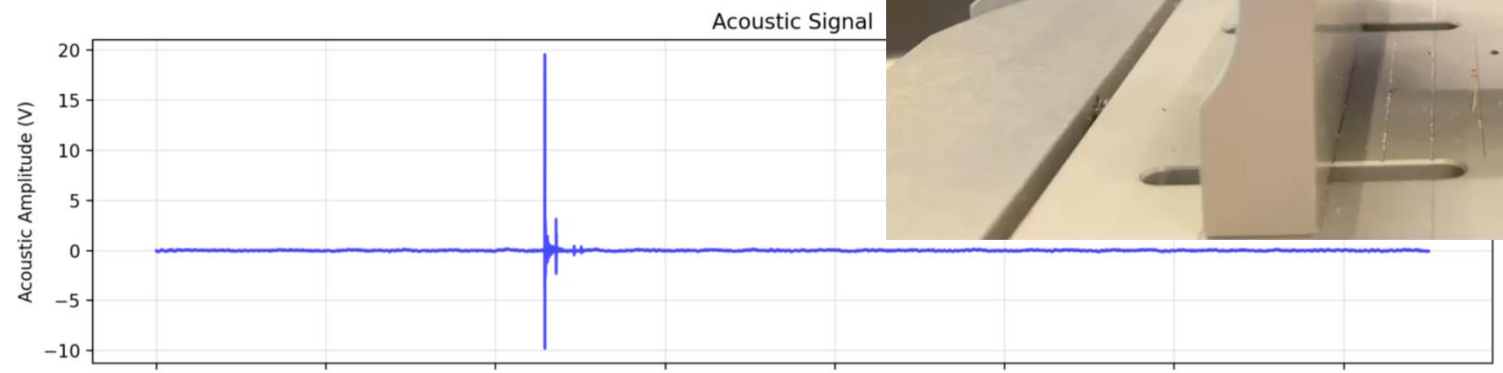
- 3 point bending
- Speed 2 mm/s
- Break detection stop
- Loadcell 500N
- Distance 60

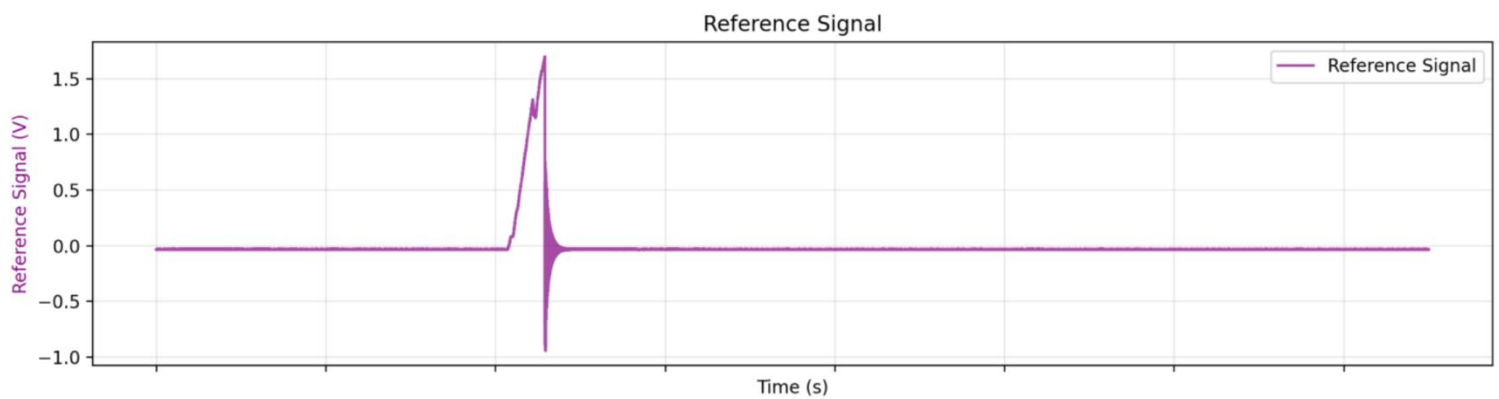
Field	Value
ID	chocolate-1-2
speed	2
probe	3pointbending
loadcel	500
type	ref
Date	2026-01-22
Timestamp	2026-01-22 11:14:23
Sample Rate (Hz)	65536

Field	Value
ID	chocolate-1-2
speed	2
probe	3pointbending
loadcel	500
type	ref
Date	2026-01-22
Timestamp	2026-01-22 11:14:23
Sample Rate (Hz)	65536

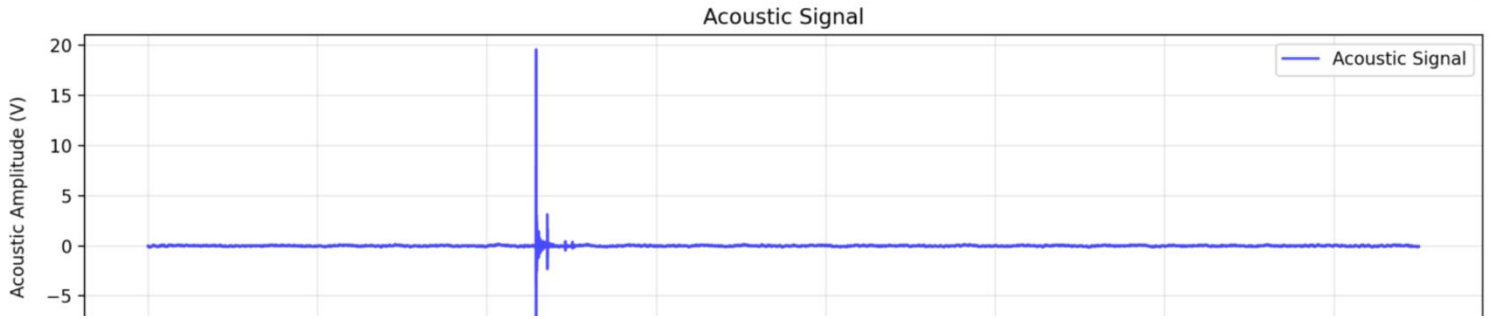


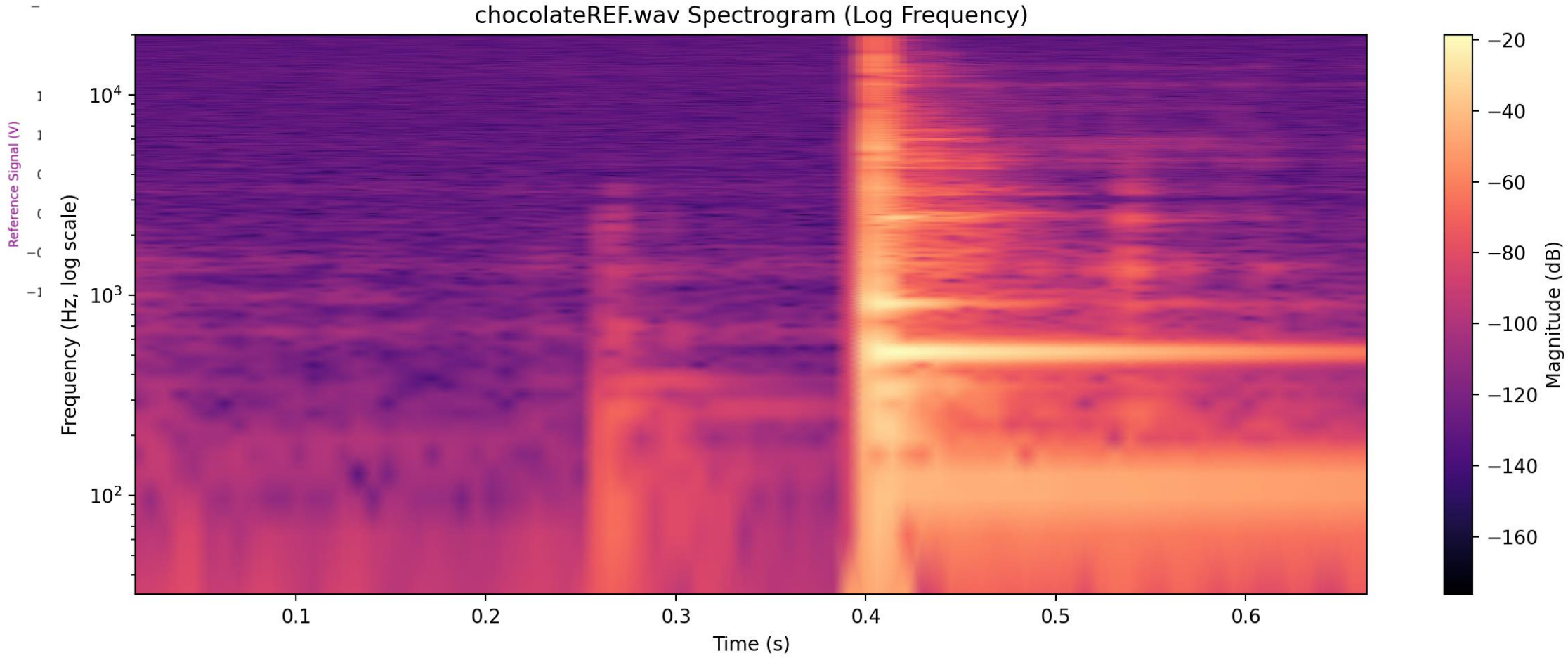
Showing plot for: 20260122_111440-(chocolate-1-2)





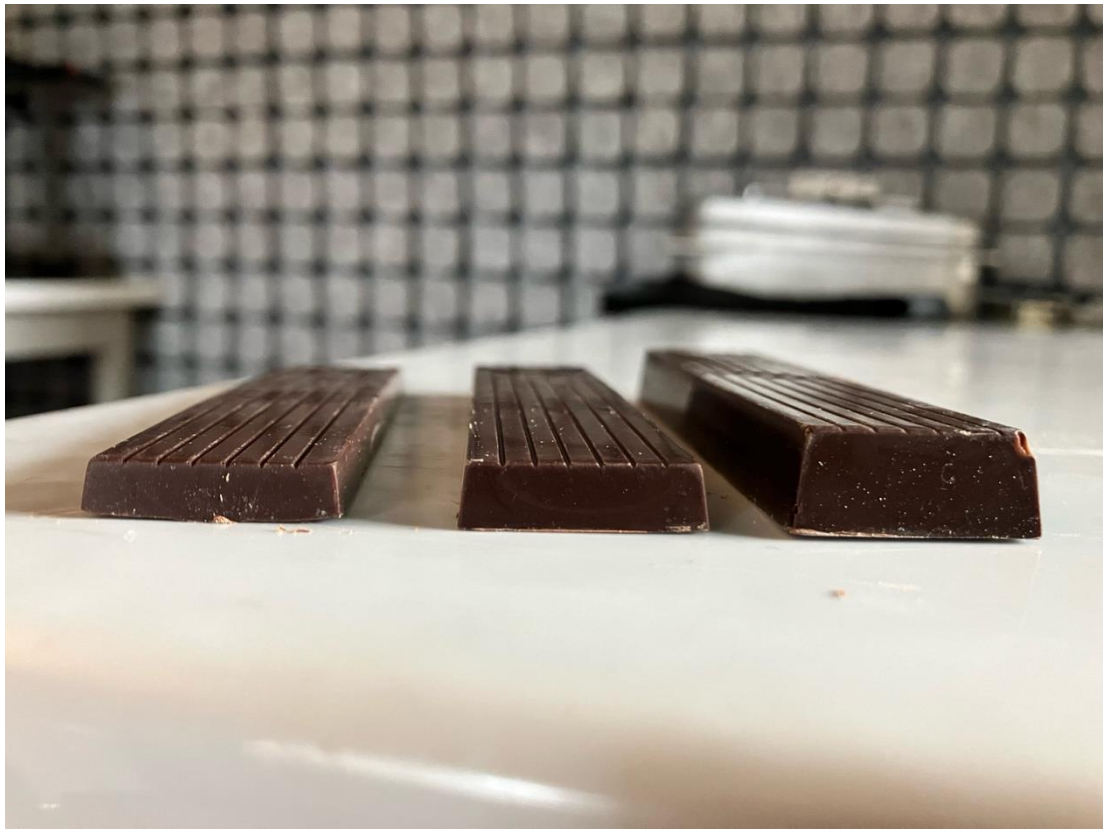
Showing plot for: 20260122_111440-(chocolate-1-2)

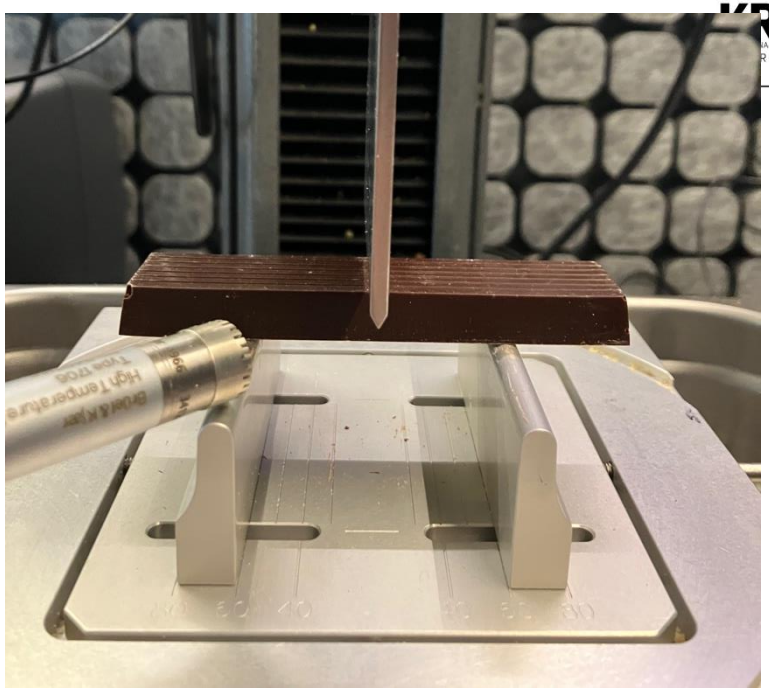




Three point bending with knife

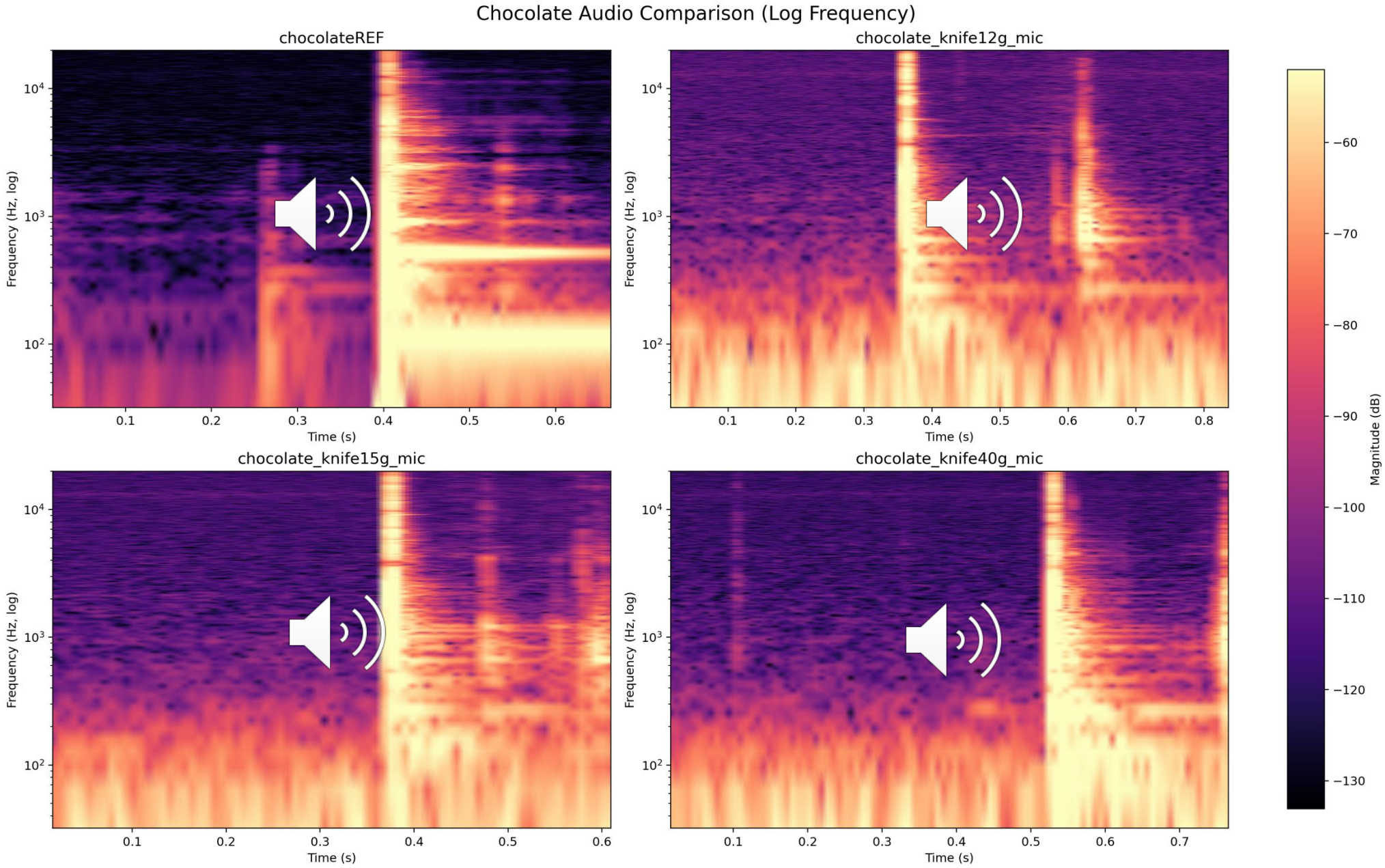
- Different thickness
- 12,5g, 15g & 40g

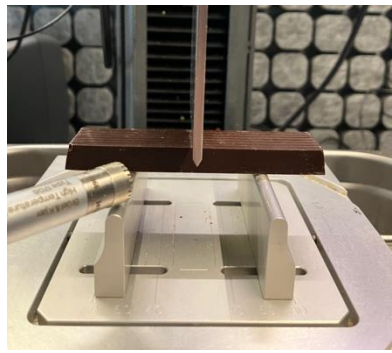




TA settings

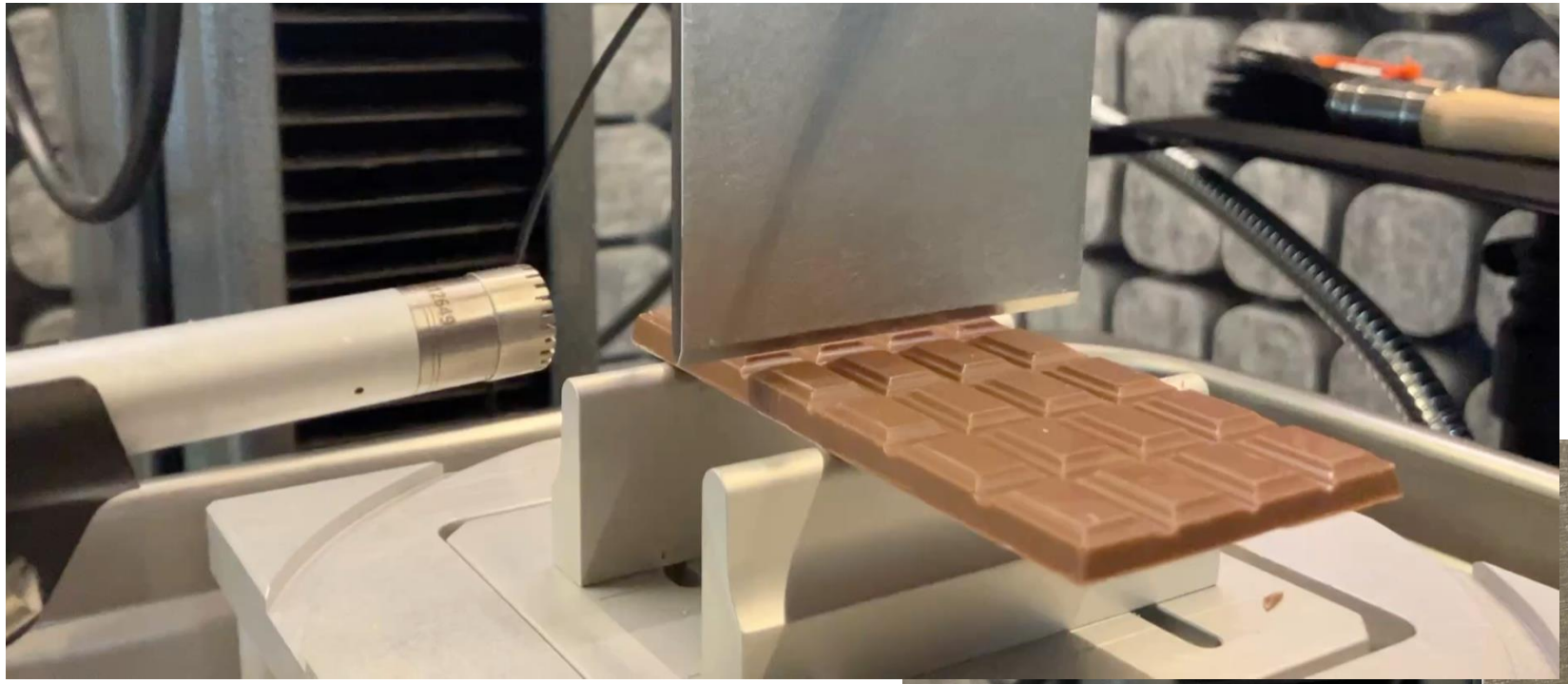
- 3 point bending with knife
- Speed 2 mm/s
- Break detection stop
- Loadcell 500N
- Distance 60

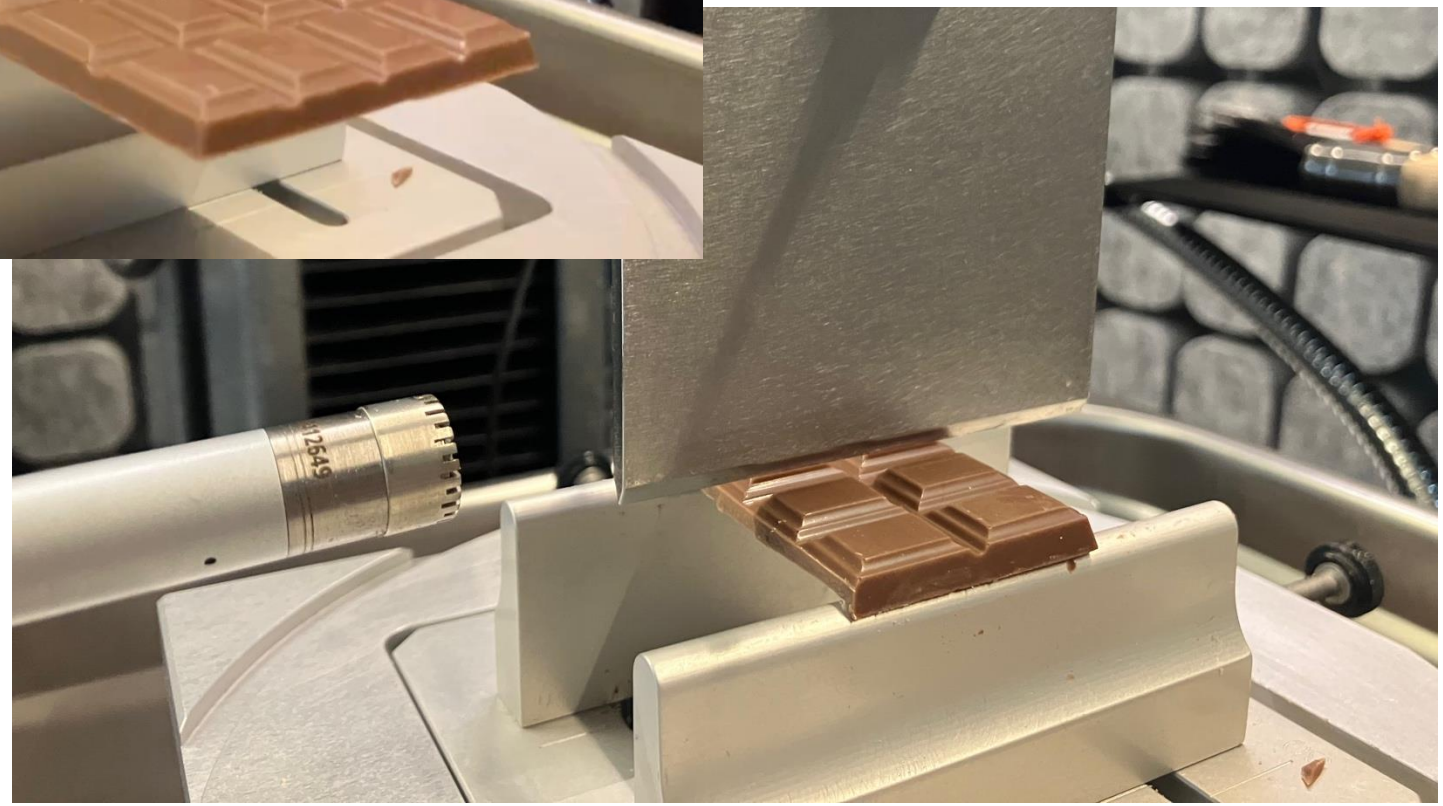

Chocolate Audio Comparison (Log Frequency)
chocolateREF
chocolate_knife12g_mic
chocolate_knife15g_mic
chocolate_knife40g_mic
Frequency (Hz, log)
Time (s)
Magnitude (dB)



12g Knife

from 1 to 5 measurements/tablet





Sample code	Omschrijving
C0799/MC01	Referentie melkchocolade
C0799/DC01-REF	Referentie fondant chocolade (met 35% totaal vetgehalte)
C0799/DC01-CB	C0799/DC01-REF met extra cacaoboter (met 40% totaal vetgehalte)
C0799/DC01-CB-BO	C0799/DC01-REF met extra cacaoboter en boterolie (met 40% totaal vetgehalte, waarvan 3% boterolie)

Sample code	**Description**	**Predicted snap**	**Sensorical snap evaluation (Cacaolab)**
C0799/MC01	Referentie melkchocolade	Least snap	Less snap
C0799/DC01-CB	C0799/DC01-REF **extra cacaoboter** (met 40% fat)	Most snap	More snap
C0799/DC01-REF	Referentie fondant chocolade (met 35% fat)	In betweeen snap	More snap
C0799/DC01-CB-BO	C0799/DC01-REF **extra cacaoboter en boterolie** (40% total fat, 3% boterolie)	In between snap	More snap

Melting Profile via DSC (Differential Scanning Calorimetry)

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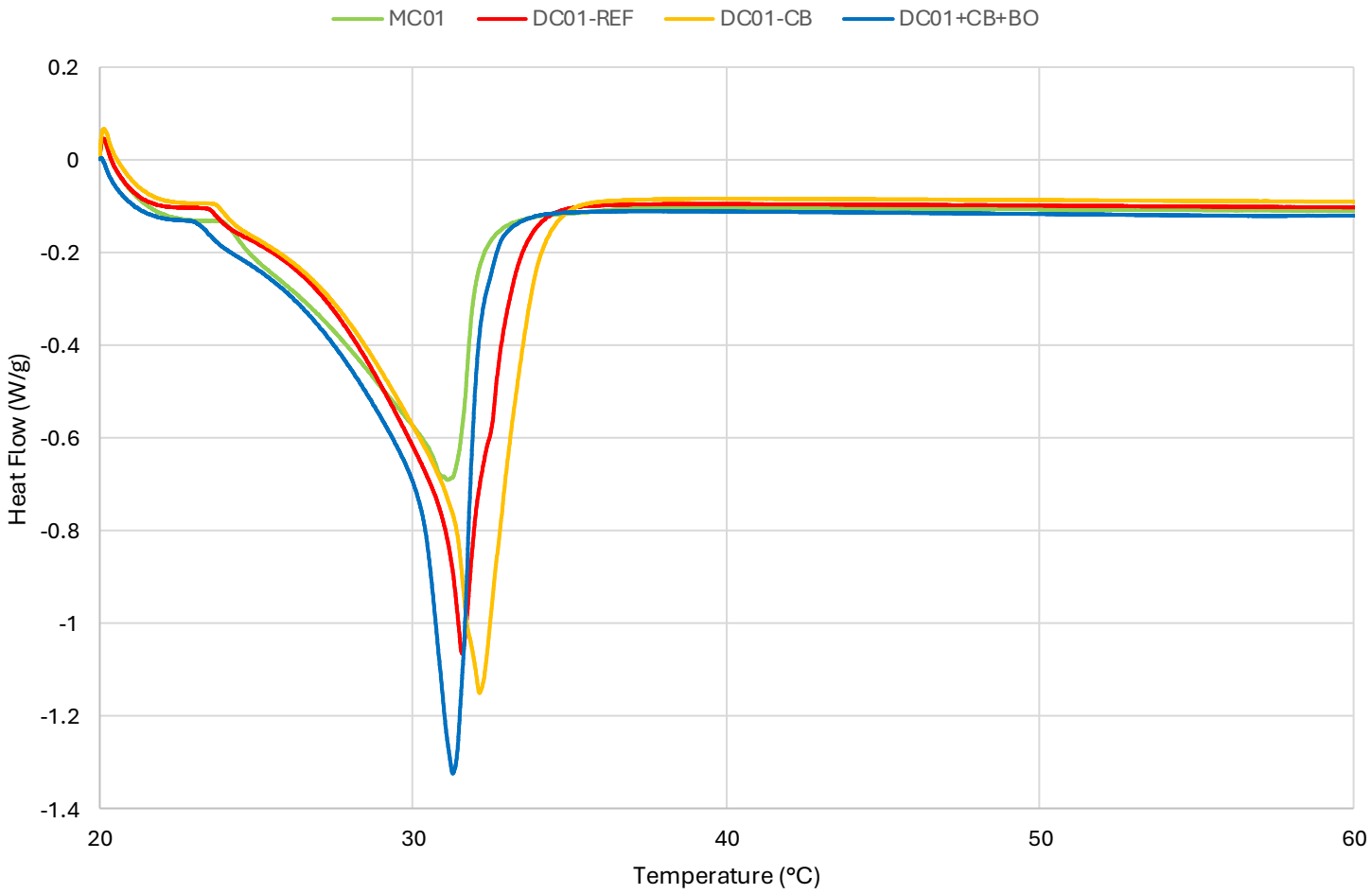

Melting Profile via DSC (Differential Scanning Calorimetry)

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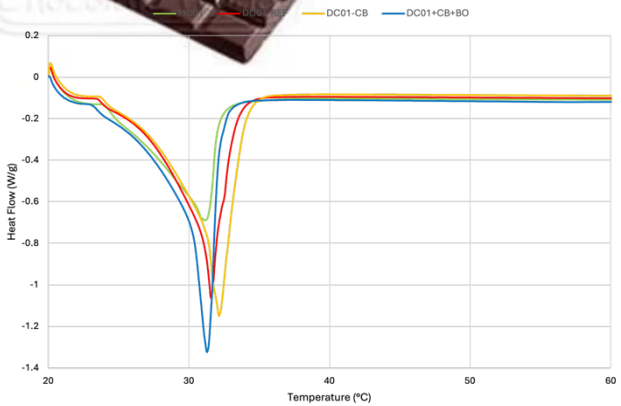
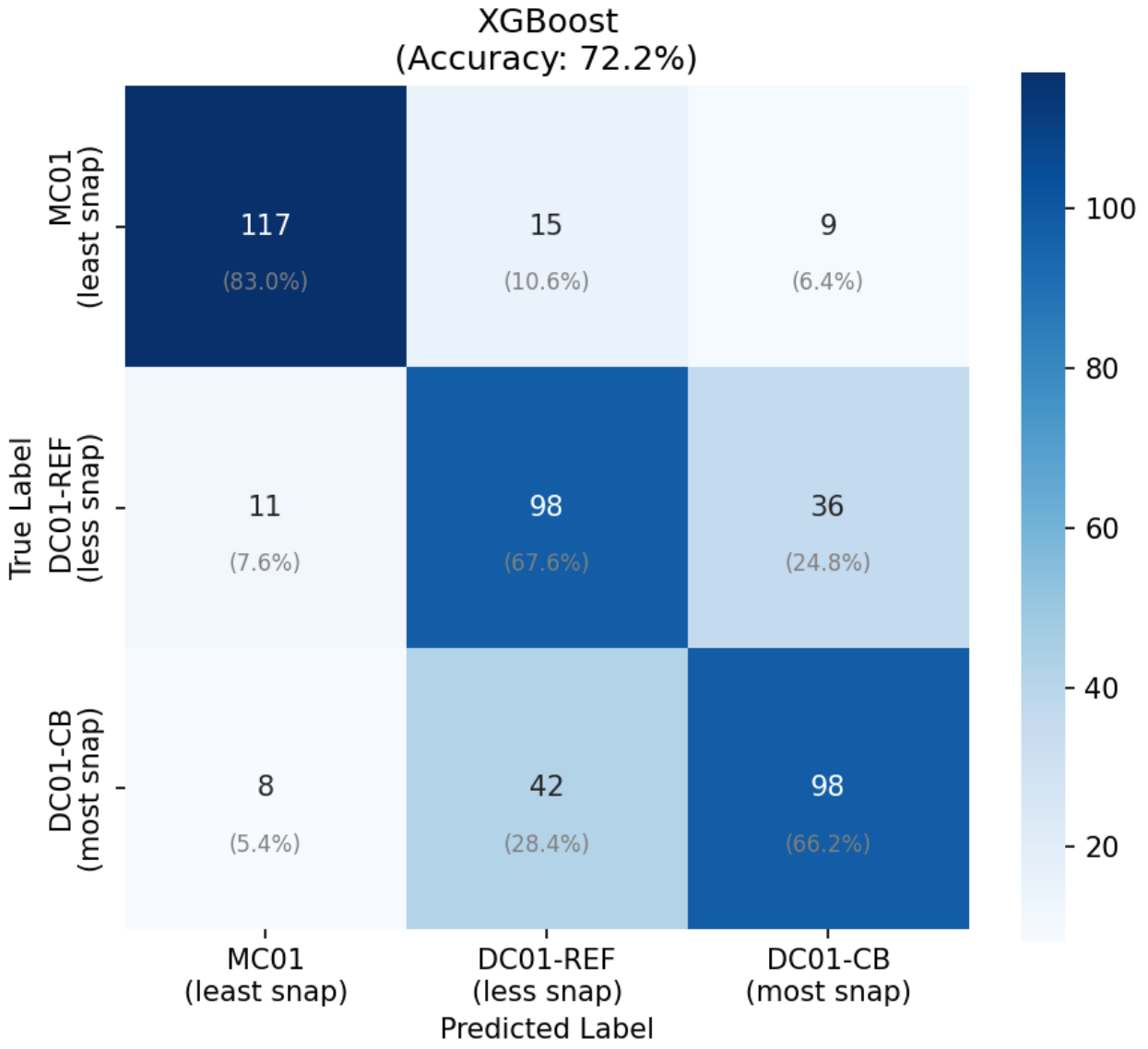
DEC 2026



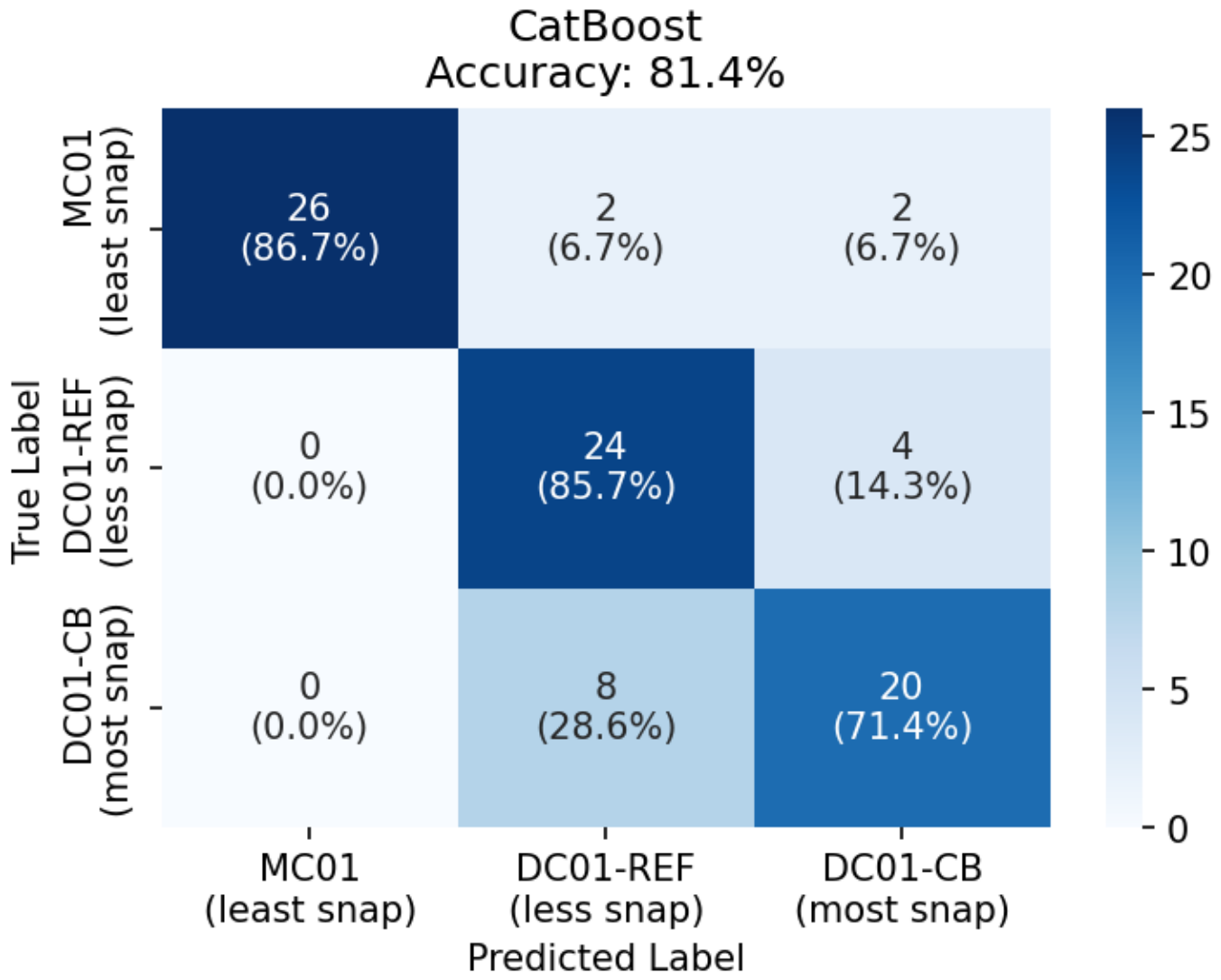
Correlation with snap?

Sample	T_{onset} (°C)	T_{max} (°C)	T_{offset} (°C)	Smeltenthalpie (J/g)
MC01	23.2 ± 0.2	31.2 ± 0.2	34.2 ± 0.2	**33.8 ± 0.9**
DC01-REF	24.2 ± 0.2	31.6 ± 0.1	33.9 ± 0.4	**43.4 ± 0.5**
DC01-REF+CB	24.4 ± 0.1	32.1 ± 0.3	34.4 ± 0.2	**48.5 ± 0.5**
DC01-REF+CB+BO	23.4 ± 0.1	31.1 ± 0.1	32.8 ± 0.3	**47.3 ± 1.5**

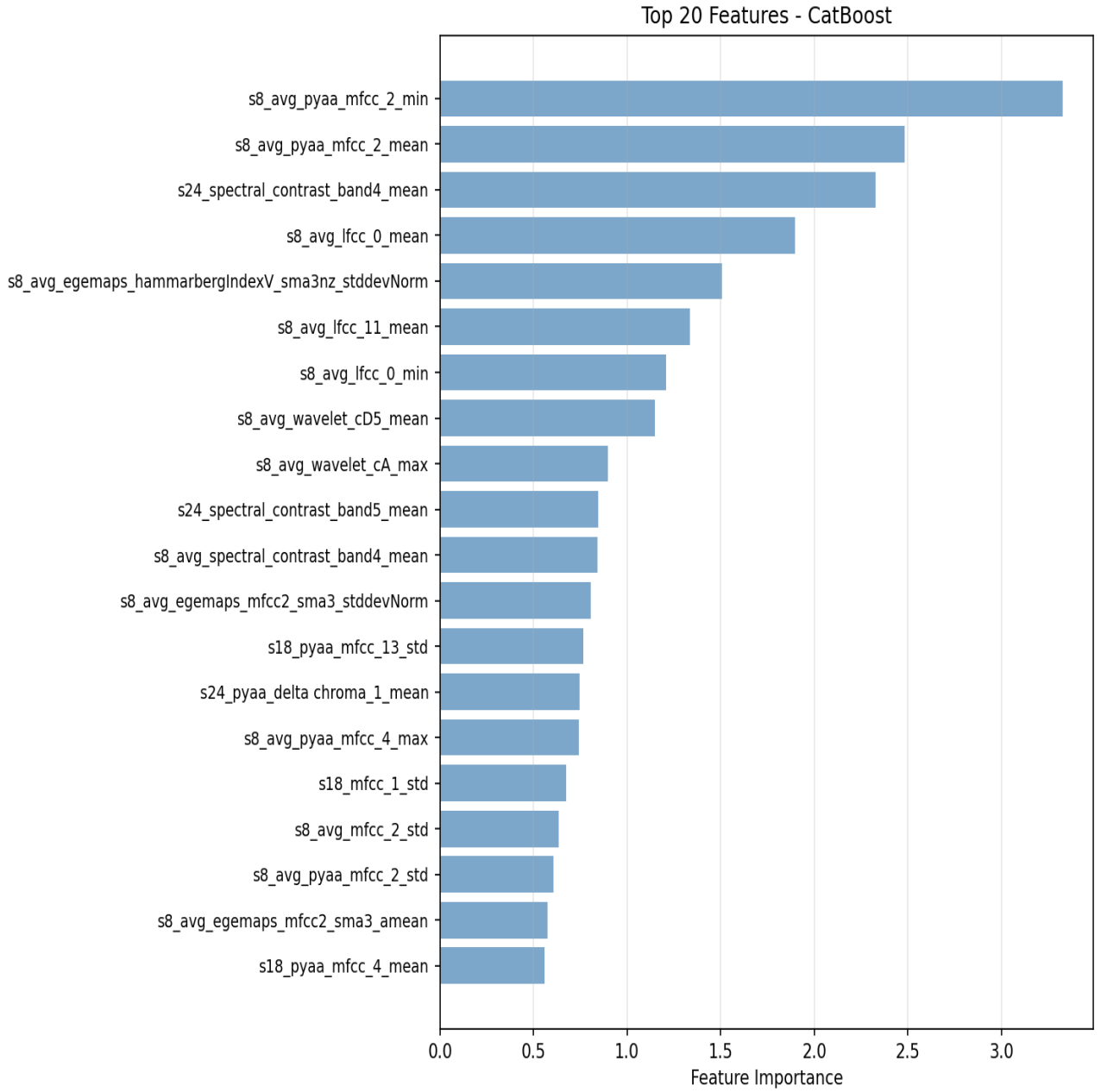
Classification of MC01, SC01-REF, DC01-CB sound = size 8 snap



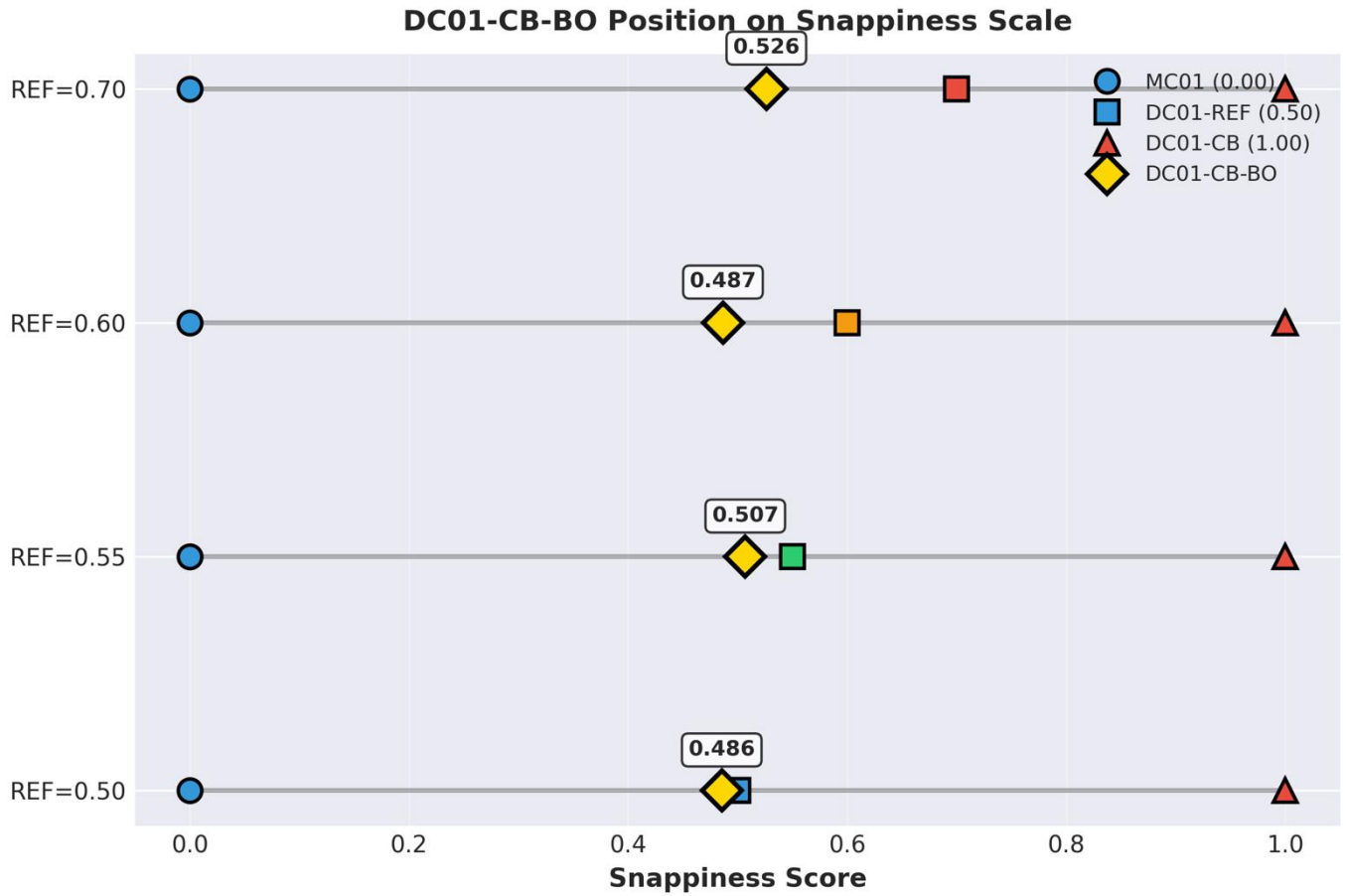
Classification of MC01, SC01-REF, DC01-CB sound = all snaps



- MFCC/LFCC: spectral signature of the chocolate snap
- Spectral contrast: Measures how sharp and crisp the break sounds
- Wavelet features: Detect the short, sudden energy burst during breaking
- eGeMAPS features: Describe acoustic texture and energy distribution



Position of DC01-CB-BO vs other categories



und 0.49-0.53, showing medium-high snappiness
ess of the reference scale setting.

t

Next steps

- Finding sensory markers for snap of chocolate
- Development of snappiness - scale

-6-
Breaded & Battered products

Nugget

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- Same matrix (chicken)
- Different properties
  - Breadcrumb type
  - Prefrying time
  - Preparation method

- Production @ GEA --> stock of samples

8 types of nuggets

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Fry 2.5 min

Types ranked 1 – 10

Type 1
CB3.144
Prefry: 20 s

Type 2
CB3.144
Prefry: 45 s

Type 3
SB-40
Prefry: 20 s

Type 4
SB-40
Prefry: 45 s

Type 5
CB353.144
Prefry: 45 s

Type 6
CB353.144
Prefry: 20 s

Type 7
Panko Style CB204.144
Prefry: 20 s

Type 8
Panko Style CB204.144
Prefry: 45 s

Airfry 10 min

Types ranked 1 – 10

Type 1
CB3.144
Prefry: 20 s

Type 2
CB3.144
Prefry: 45 s

Type 3
SB-40
Prefry: 20 s

Type 4
SB-40
Prefry: 45 s

Type 5
CB353.144
Prefry: 45 s

Type 6
CB353.144
Prefry: 20 s

Type 7
Panko Style CB204.144
Prefry: 20 s

Type 8
Panko Style CB204.144
Prefry: 45 s

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8 types of nuggets

Fry 2.5 min

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Airfry 10 min

Types ranked 1 – 10

Type 1
CB3.144
Prefry: 20 s

Type 2
CB3.144
Prefry: 45 s

Type 3
SB-40
Prefry: 20 s

Type 4
SB-40
Prefry: 45 s

Type 5
CB353.144
Prefry: 45 s

Type 6
CB353.144
Prefry: 20 s

Type 7
Panko Style CB204.144
Prefry: 20 s

Type 8
Panko Style CB204.144
Prefry: 45 s

Dataset

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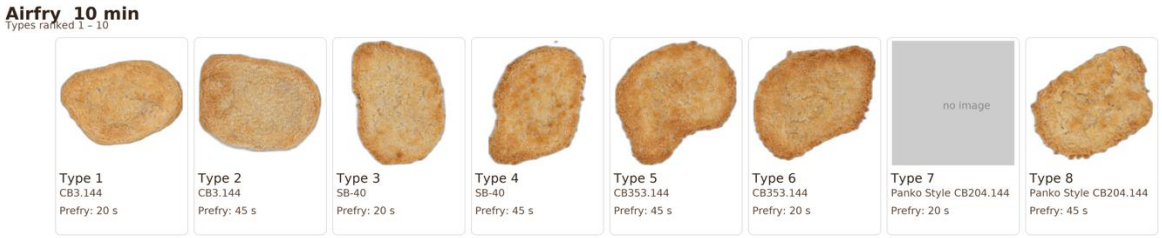

→ 40 measurements/nugget of both processes

Method:

- Crush whole product, custom made probe
- Force till 450N
- Speed 2mm/s

→ Can we classify different breadcrumb types, prefrying times & baking method?

3 baking processes

Airfry 180°C, 10 min

Oven 200°C, 10% steam, 7 min

Fry 180°C, 2,5min

Sensory testing protocol

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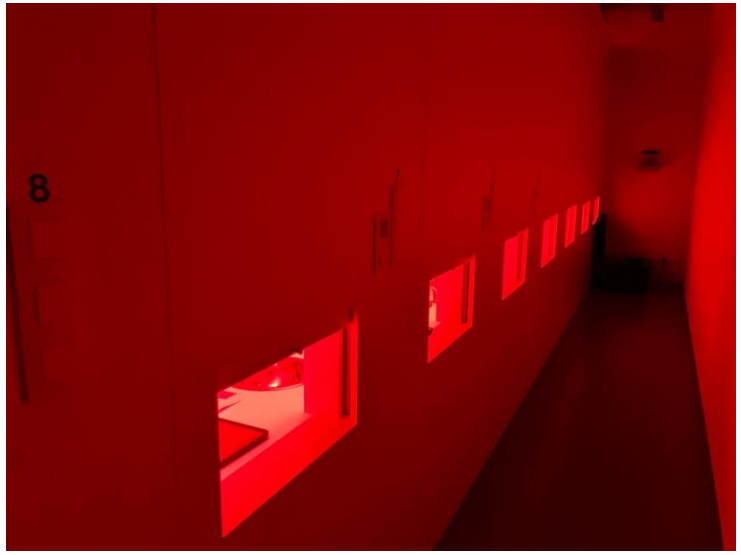
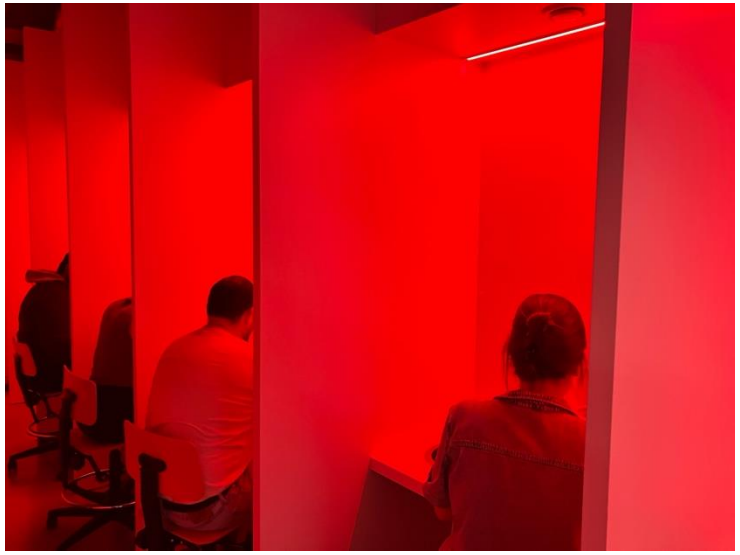
- 3 ranking tests (4 samples) → from least to most crispy
- 2 paired tests (2 samples) → most crispy?
- 11 experts (4 companies)
- Red light to eliminate colour bias
- Evaluate exactly after 2 minutes
- Scoring of tests





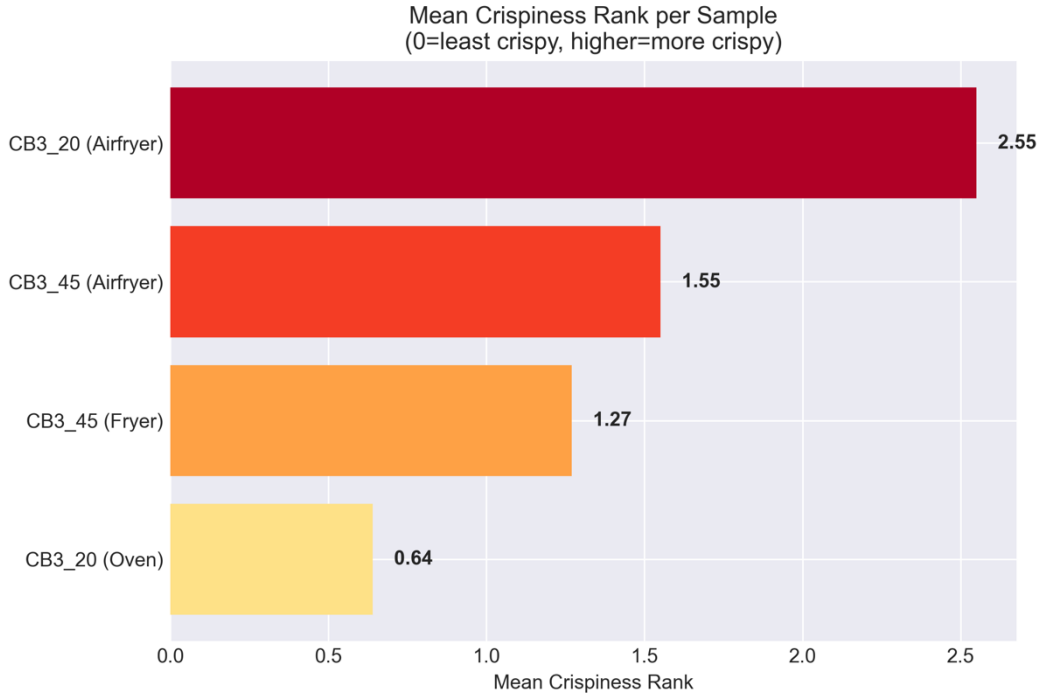
Ranking:

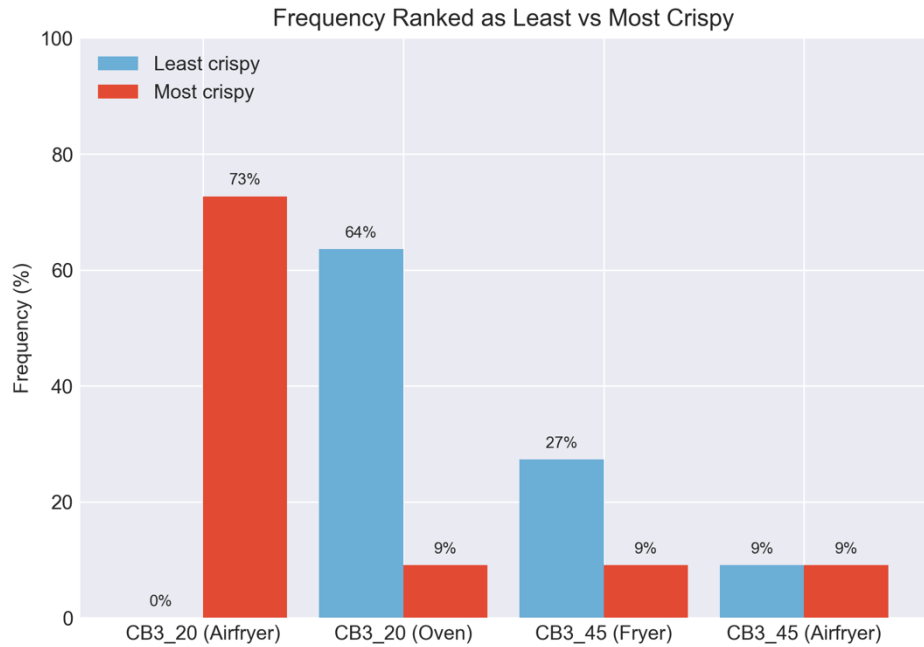
Least crispy			Most crispy
0	**1**	**2**	**3**

Paired test:

Least crispy	Most crispy
0	**1**

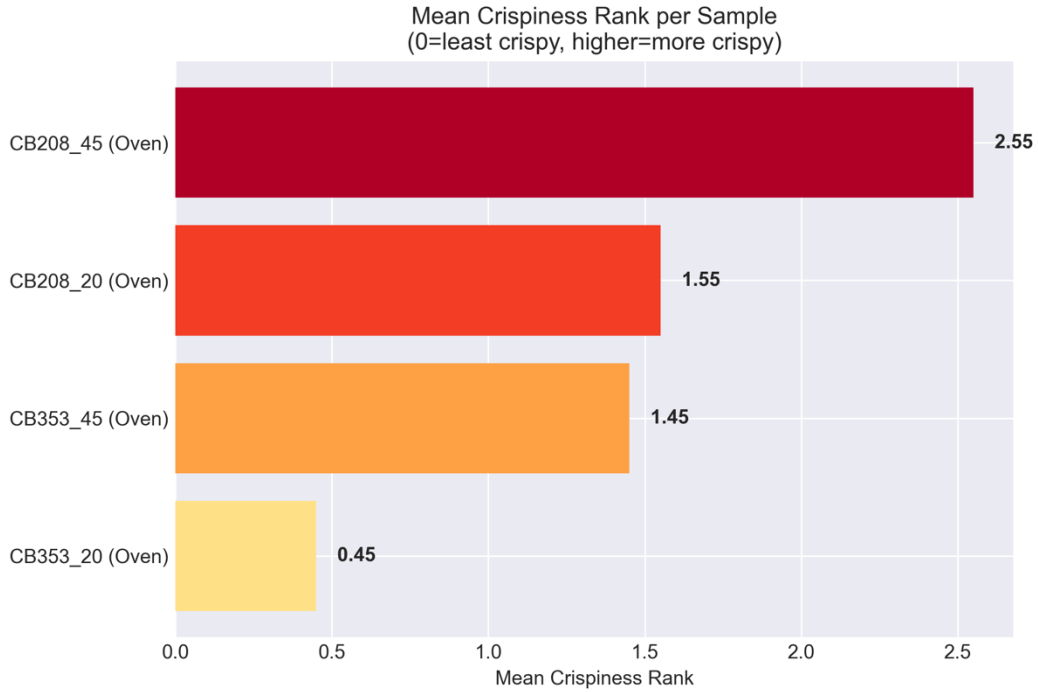
Test 1: Crispiness Rankings

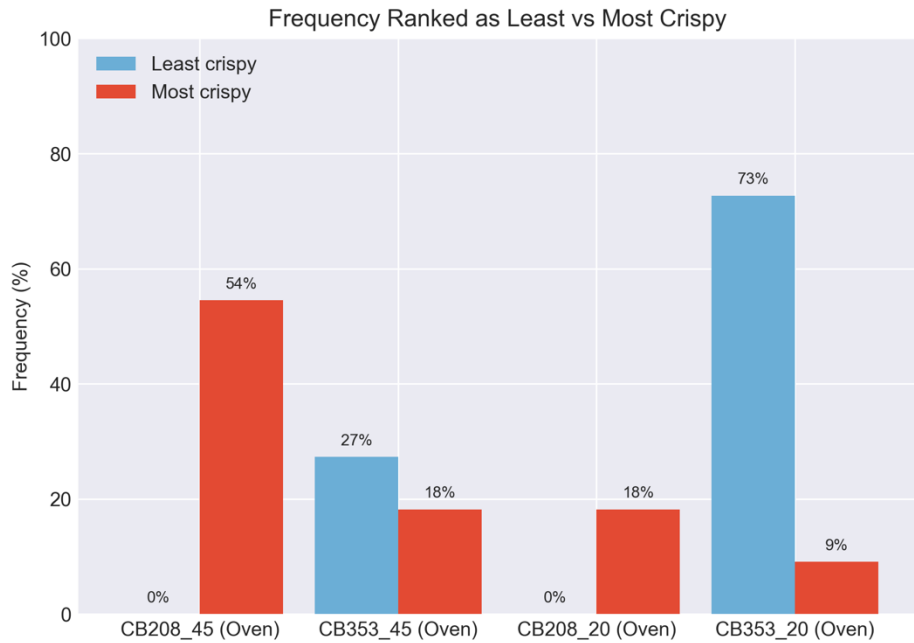




Nugget Type	Mean Rank	StdDev	Least Crispy %	Most Crispy %
CB3_20 (Oven)	0.64	0.98	63%	9%
CB3_45 (Fryer)	1.27	0.96	27%	9%
CB3_45 (Airfryer)	1.55	0.78	9%	9%
CB3_20 (Airfryer)	2.55	0.78	0%	72%

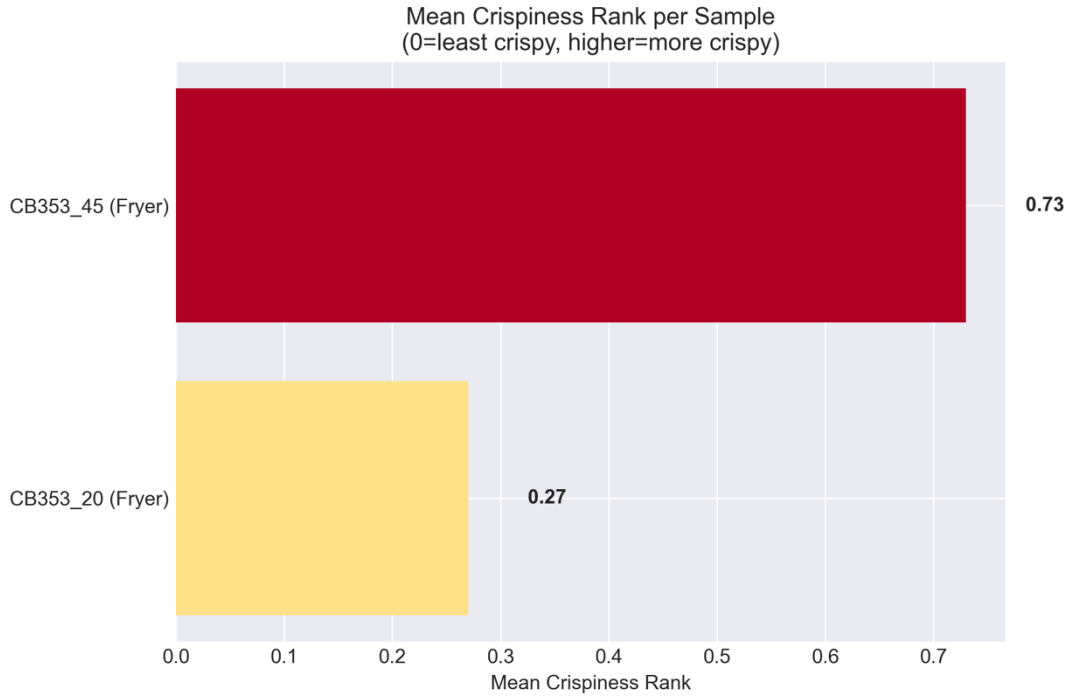
Test 4: Crispiness Rankings

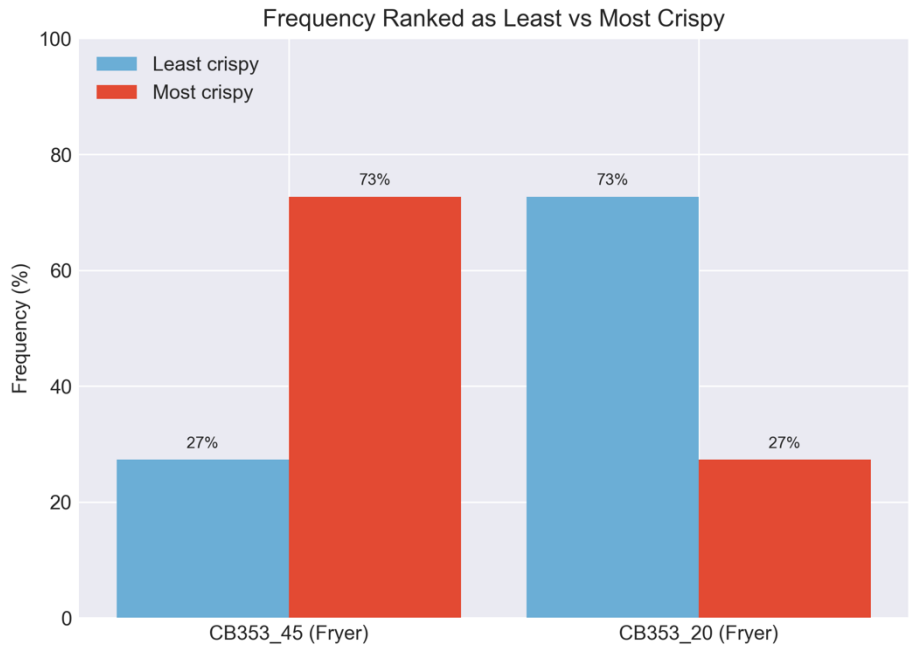




Nugget Type	Mean Rank	StdDev	Least Crispy %	Most Crispy %
CB353_20 (Oven)	0.45	0.89	72%	9%
CB353_45 (Oven)	1.45	1.08	27%	18%
CB208_20 (Oven)	1.55	0.78	0%	18%
CB208_45 (Oven)	2.55	0.50	0%	54%

Test 3b: Crispiness Rankings





Nugget Type	Mean Rank	StdDev	Least Crispy %	Most Crispy %
CB353_20 (Fryer)	0.27	0.45	72%	27%
CB353_45 (Fryer)	0.73	0.45	27%	72%

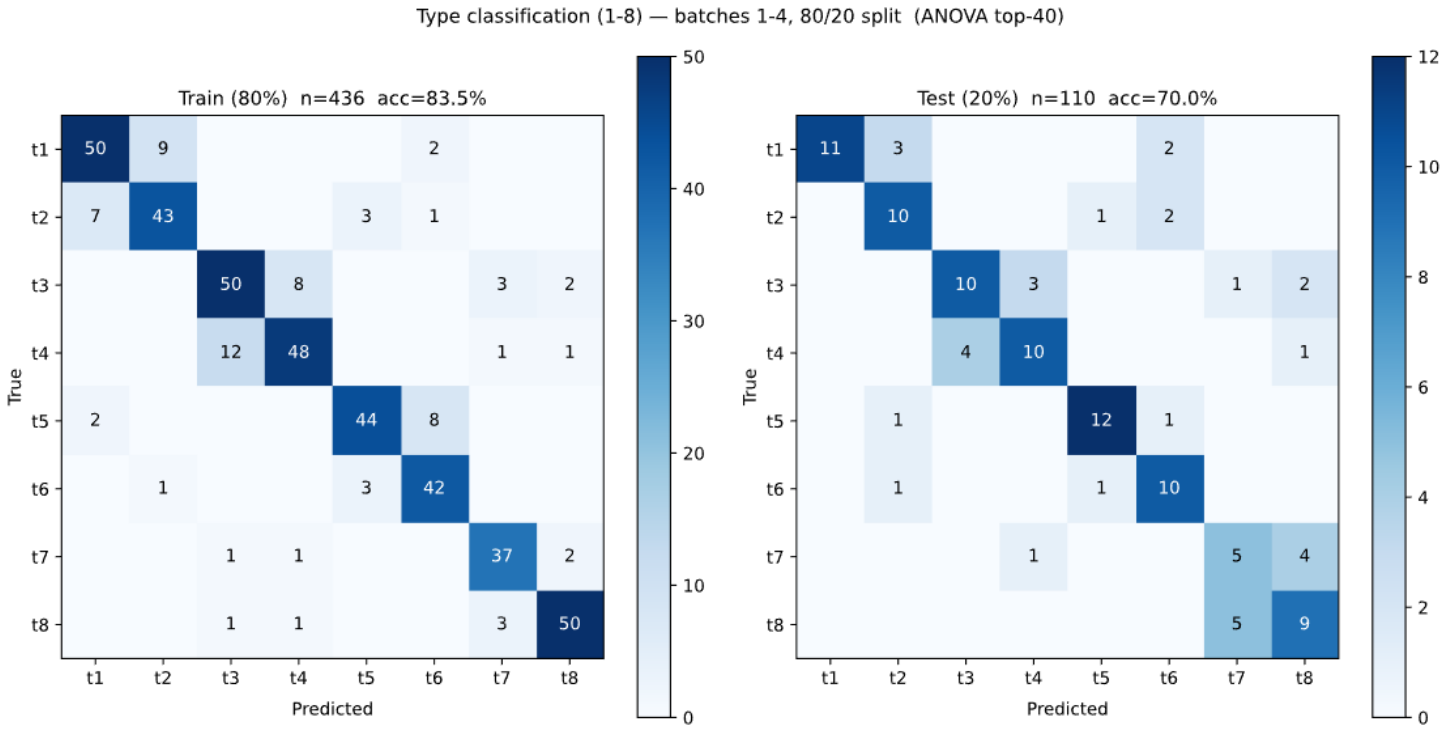
Experimental setup:

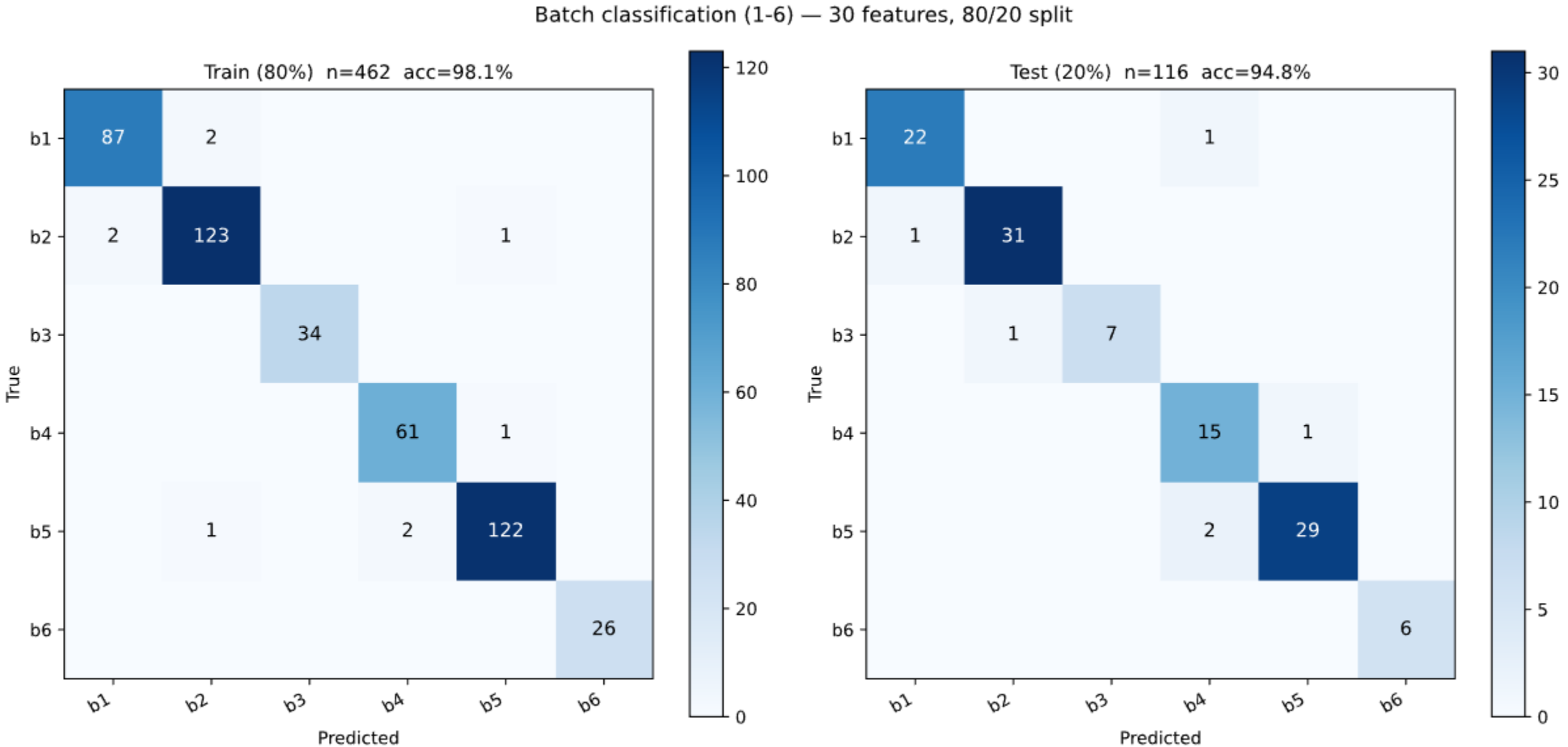
- 6 batches on different dates
- No overlap between batches
- Batch 6: sensory test

type_method	batch 1	batch 2	batch 3	batch 4	batch 5	batch 6
1AF	0	38	0	0	0	2
1F	39	0	0	0	0	2
2AF	0	40	0	0	0	2
2F	27	0	0	0	0	4
3AF	0	0	0	0	39	0
3F	0	0	0	40	0	0
4AF	0	0	0	0	39	0
4F	0	0	0	38	0	0
5AF	0	40	0	0	0	2
5F	28	0	0	0	0	2
6AF	0	40	0	0	0	0
6F	18	0	0	0	0	2
7AF	0	0	0	0	39	2
7F	0	0	12	0	0	0
8AF	0	0	0	0	39	0
8F	0	0	30	0	0	0

- Simple linear model on 30 features
- Confusion between:
  - T1/2 and T5/6
  - T3/4 and T7/8
  - Overlap in batch
- No cross-batch confusion
- Batch specific audio signature!

type_method	batch 1	batch 2	batch 3	batch 4	batch 5	batch 6
1AF	0	38	0	0	0	2
1F	39	0	0	0	0	2
2AF	0	40	0	0	0	2
2F	27	0	0	0	0	4
3AF	0	0	0	0	39	0
3F	0	0	0	40	0	0
4AF	0	0	0	0	39	0
4F	0	0	0	38	0	0
5AF	0	40	0	0	0	2
5F	28	0	0	0	0	2
6AF	0	40	0	0	0	0
6F	18	0	0	0	0	2
7AF	0	0	0	0	39	2
7F	0	0	12	0	0	0
8AF	0	0	0	0	39	0
8F	0	0	30	0	0	0




Batch classification (1-6) — 30 features, 80/20 split
Train (80%) n=462 acc=98.1%
Test (20%) n=116 acc=94.8%
True
Predicted
b1
b2
b3
b4
b5
b6
87
2
2
123
1
34
61
1
1
2
122
26
22
1
1
31
1
7
15
1
2
29
6
120
100
80
60
40
20
0
30
25
20
15
10
5
0

t

- Problem for Fry/Airfry classification
  - Does the model learn the batch audio signature?

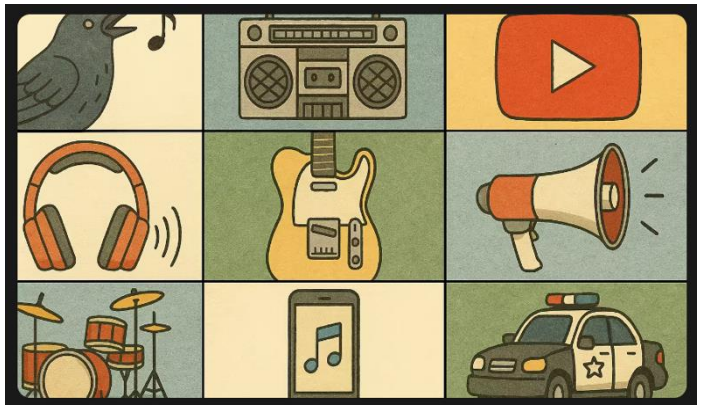
type_method	batch 1	batch 2	batch 3	batch 4	batch 5	batch 6
1AF	0	38	0	0	0	2
1F	39	0	0	0	0	2
2AF	0	40	0	0	0	2
2F	27	0	0	0	0	4
3AF	0	0	0	0	39	0
3F	0	0	0	40	0	0
4AF	0	0	0	0	39	0
4F	0	0	0	38	0	0
5AF	0	40	0	0	0	2
5F	28	0	0	0	0	2
6AF	0	40	0	0	0	0
6F	18	0	0	0	0	2
7AF	0	0	0	0	39	2
7F	0	0	12	0	0	0
8AF	0	0	0	0	39	0
8F	0	0	30	0	0	0

Next steps

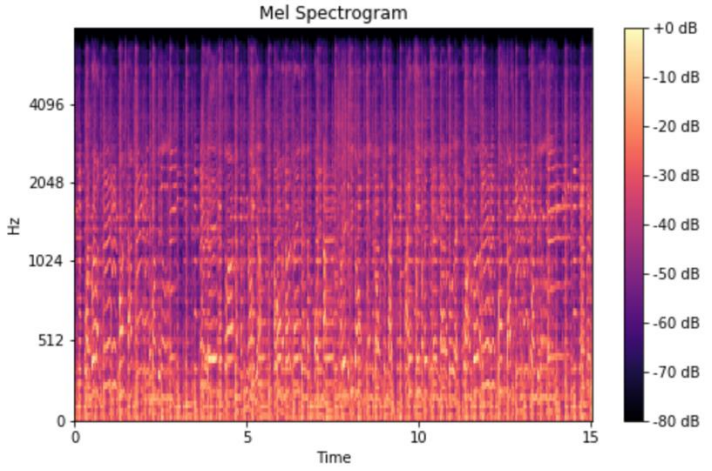
- Oven tests (instrumental) on ranked samples
- Model training and correlation with sensory tests (classification → ranking)

Towards a generalized Deep AudioX

- **Audioset:**
  - Millions of 10s audio clips
  - labbeled



- **PassT:**
  - Vision Transformer
  - Trained on audioset Mel spectrograms



Towards a generalized Deep AudioX

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- **DeepaudioX**
  - Python library to retrain PaSST

Similar classification results as the ML method

- **Crunchyness ranking model:**
  - Retrain PaSST with our dataset
  - Samples with ‘known’ crunchyness ranking
  - Pairwise classification in product group
  - PaSST already has a ‘notion of crunchyness’

Generalized Machine Learning model

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- **XGBClassifier** (Xgboost library)
  - One model for pairwise classification off all products
  - Pairwise comparison of products in the same product group

Generalized Machine Learning model

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JAN 2025–
DEC 2026

- **XGBClassifier** (Xgboost library)
- Most important features:

1. imfcc_std_6_band5k_10000_15000_percussive_focus
2. imfcc_std_11_band5k_20000_25000_percussive_focus
3. imfcc_std_9_band5k_15000_20000_percussive_focus
4. num_bursts_band5k_20000_25000
5. isolated_burst_count_band5k_20000_25000
6. imfcc_std_10_band5k_20000_25000_percussive_focus
7. num_bursts_standard_bandpass_1000_25000
8. transient_to_sustained_ratio_antialiasing_32khz
9. imfcc_std_12_band5k_20000_25000_percussive_focus
10. imfcc_std_10_band5k_15000_20000_percussive_focus

Ultrasonic microphone: tests start next week

Dense/Solid
(no air in the crispy material, rigid, fractures into shards)

Through Crisp
(whole object is crisp)

Shell Crisp
(crispy outside, soft inside)

Kroepoek

Extruded snacks

Tempura

Airy
(air pockets in the crispy material, collapses, crumbles or shatters)

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JAN 2025–
DEC 2026

Dataset status

Product	# measurements
Chips	995
Baguette	459
Chocolate	59
Nuggets	678
French Fries	341
Cookies	1.241
Other	1.102
Total	**4875**

Did you hear about KRAK?

Festival

NIEUWS PROGRAMMA PRAKTISCH HERBELEEF TICKETS

HET **GROOTSTE WETENSCHAPSFESTIVAL** VAN DE **BENELUX**

NERDLAND Festival

5 YEARS ANNIVERSARY · EDITION ·

22 → 25 MEI 2026

DOMEIN PUYENBROECK · WACHTEBEKE

DEME Recupel vtm music HLN ZIEZO VLAIO provincie Oost-Vlaanderen

HOE KLINKT JOUW FAVORIETE SNACK?

ZATERDAG , DOORLOPEND
ADVENTURE ISLAND

ZONDAG , DOORLOPEND
ADVENTURE ISLAND

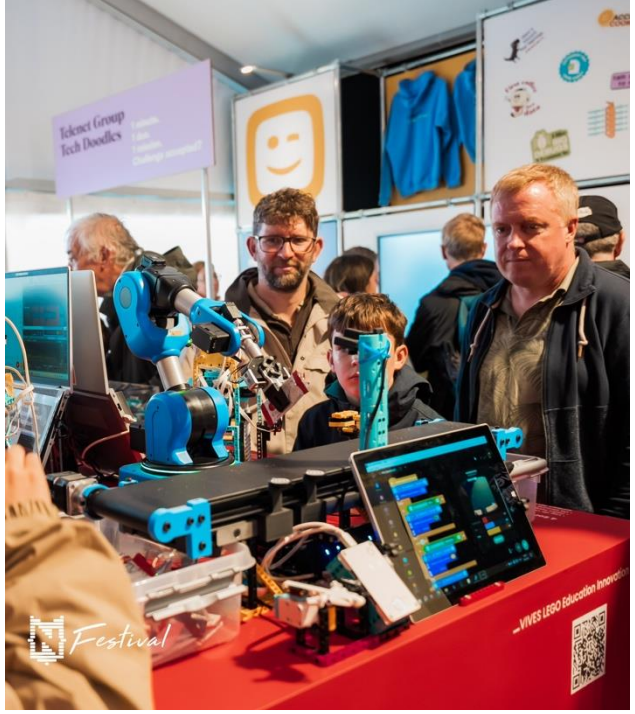
MAANDAG , DOORLOPEND
ADVENTURE ISLAND

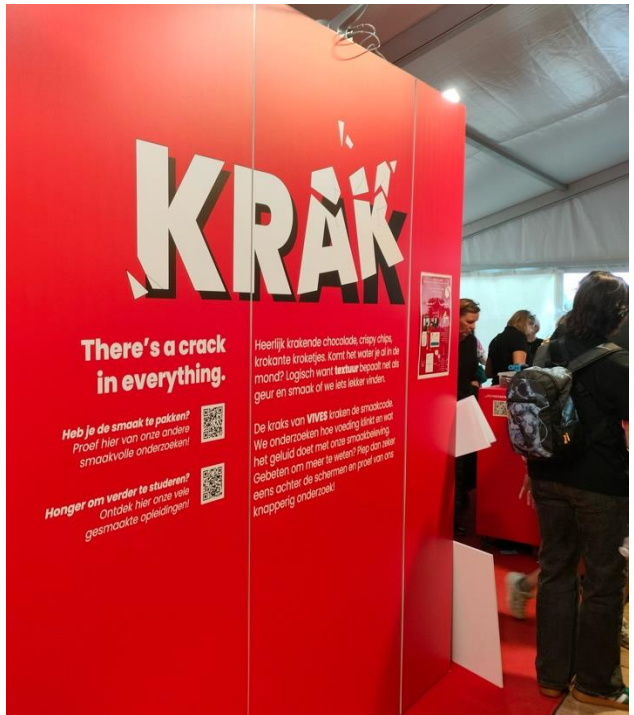
EXPERIENCE

CRUNCH WIST JE DAT HET GELUID VAN EEN KNAPPERIGE CROISSANT OF KRAKENDE CHIPS JE SMAAKBELEVING COMPLEET KAN VERANDEREN?

Bij Hogeschool VIVES nemen ze die crunch serieus en onderzoeken ze hoe geluid onze manier van proeven beïnvloedt. En jij mag meedoen! Met AI analyseer je geluidsgolven en match je die met de ultieme smaakervaring.

Klinkt lekker, euh, cool toch? In deze unieke experience stap je in de smaakhokjes, proef je met je oren én je smaakpapillen en ontdek je hoe technologie en smaak samensmelten in een langgerekte ‘Mmmmmmm’. Snacken voor de wetenschap!





KRAK @ Nerdland Festival

23, 24 & 25 mei 2026

4-8 MAY - BARCELONA, SPAIN

ICASSP 2026

2026 IEEE International Conference on Acoustics, Speech, and Signal Processing

Where Signals Meet Intelligence

EXPLORE THE PHOTO GALLERY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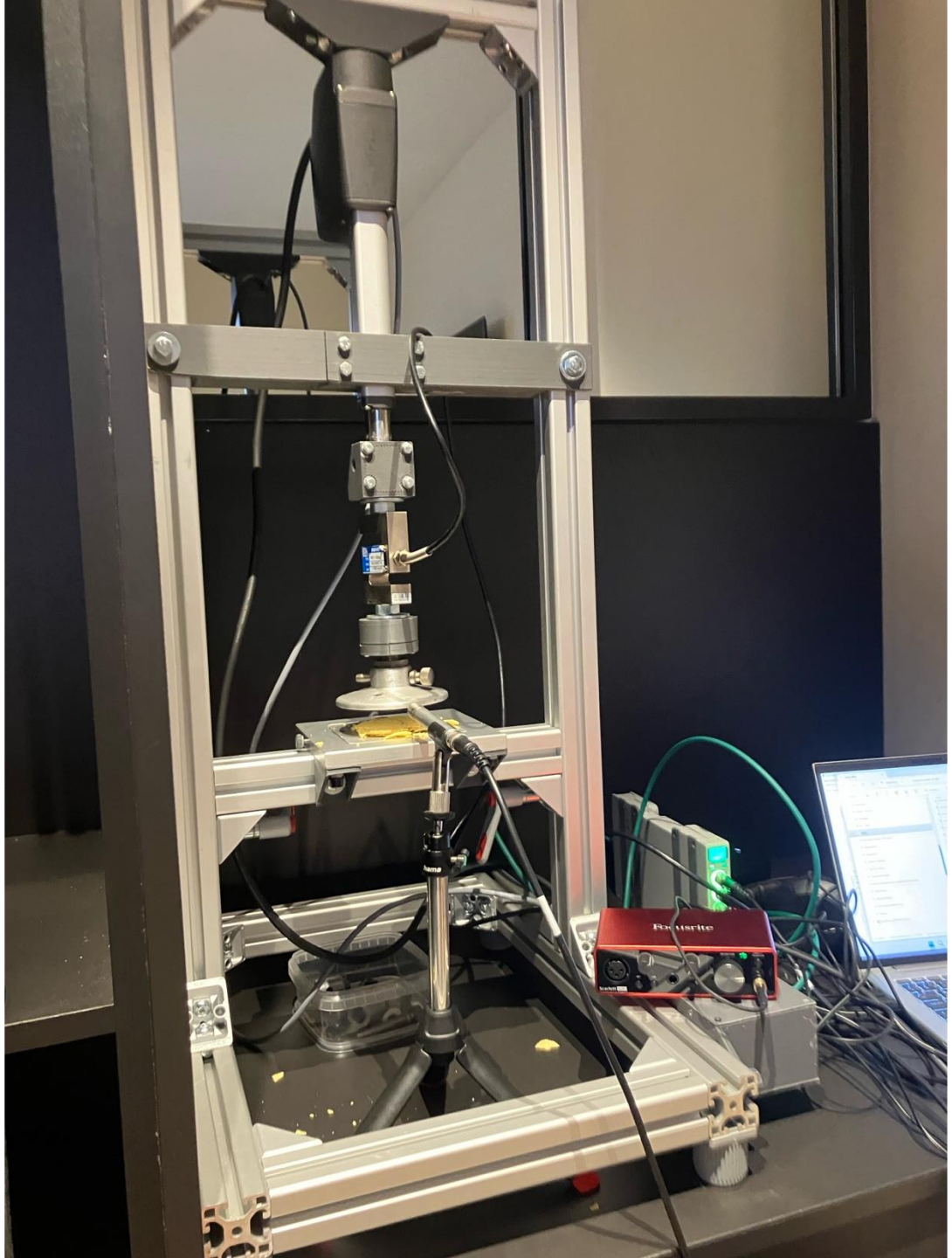
Blades


Poster Area
26
01
02

Mobile prototype

- Loadcel up to 1000N
- Flexible for different microphone set-ups
- Mounting of different probes
- Transportable



What’s next?

CRISP

ACOUSTIC INTELLIGENCE

FOR FOR FOOD TEXTURE

- Generalization across recording conditions
- Generalization to different foods
- Multi-sensory prediction
- development of cost-effective, at-line or laboratory system

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Demo

From signal
to
crispiness evaluation

Questions, discussion & feedback

menti.com/algazauqu7rp

KRAK

OP ZOEK NAAR DE PERFECTE CRUNCH

JAN 2025–
DEC 2026

TETRA PROJECT

BEPALING VAN DE PRODUCTKWALITEIT VAN VOEDING
AAN DE HAND VAN GEAVANCEERDE GELUIDSANALYSE

Michaël Verlinden
Michael.Verlinden@vives.be

www.project-krak.be

MET DE STEUN VAN

AGENTSCHAP INNOVEREN & ONDERNEMEN
Vlaanderen is ondernemen
FLANDERS' FOOD

HBC.2024.0136

EEN SAMENWERKING TUSSEN

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