UNLOCKING HYPERSPECTRAL REALITY

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WHAT DID WE DO?

DATA COLLECTION

ML

- Capturing Spectral Information (for multiple samples)
- Feature Selection
- Gaussian Filtering & Processing
- Random Train - Test Split
- Train Classifier
- Calculate Metrics and Save Model
  - 95% Accuracy
- Test Sample
- Feature Processing
- Trained Classifier
- Milk
- Spezi
- Water + Milk
- Spezi + Milk
- Sugar + Milk

RASPBERRY PI 3B
AMS7265X
MILK/SUGAR/SPEZI
OUR EXPERIMENTS WITH THE TRUTH
DID YOU KNOW?

IN 2020 MICROPLASTIC PARTICLES WERE FOUND IN THE PLACENTAS OF UNBORN BABIES

DID YOU KNOW?

80% of ingredients used in personal care products have never been publicly tested for safety.

DID YOU KNOW?

99% IS THE SURVIVAL RATE FOR MELANOMA (SKIN CANCER) WHEN DETECTED EARLY

OUR PRODUCT VISION

HYPERSPECTRAL CAMERAS SENSOR

POWER & COMMUNICATION ELECTRONICS
microplastics are an emerging risk that is **not yet fully understood**

- Virtually all plastics absorb infrared (IR) light in a highly selective manner, making their infrared spectra a useful qualitative diagnostic
- The **real-time on-site** triage of microplastics (~1 mm – 5 mm) can prove to be a useful diagnostic tool

- Spectral Range: 900 nm to 1700 nm
- Pixel Resolution (using micro NIR): 135x118
- Detected Signatures:
  - 83% Almond
  - 16% Microplastics

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SKINCARE

an average person uses nine products a day with 126 unique ingredients

• Cosmetics aren’t required to be extensively tested in many parts of the world \(^1\)

• The spectra can facilitate identification of harmful chemicals and skin allergens \(^2\)\(^3\)

[1] How Cosmetics Are Not FDA Approved
**HEALTH**

**significant reduction of costs** and improved performance in disease management and prediction

- **Ovulation Monitoring**
  - the average cost of ovulation monitoring device is 100 EUR

- **Pregnancy Test**
  - at your comfort, anytime!

- **Breast/Prostate Cancer Detection**
  - don’t worry, we’ll tell you everything in time!

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[4] "The Use Of Infrared Technology As A Novel Approach For Studies With Female Animals" [URL](#)
BUSINESS OVERVIEW

GLOBAL SPECTROSCOPY MARKET

$15B

OPPORTUNITY TO BUILD

7.2% CAGR

TIGHTLY REGULATED

key opportunity for integrated solutions?

Global Spectroscopy Market (2021 to 2026) - by Technology, Application and Geography, [URL]
QUALITATIVE POSITIONING

CONVENIENT

Agilent 4300 Handheld FTIR Device [3]

EXPENSIVE

Nicolet Summit FTIR Instrument [4]

INCONVENIENT

Raspberry Pi Infrared Camera – Add On [2]

AFFORDABLE

HypStr

Spectral Engines NIRONE [1]

$$ BOM

WE’RE TEAM HypStr consisting of physicist, neuro engineer, electrical engineer, and moral supporter.
THANK YOU