



AI-Powered Multimodal Event Recognition (MER)

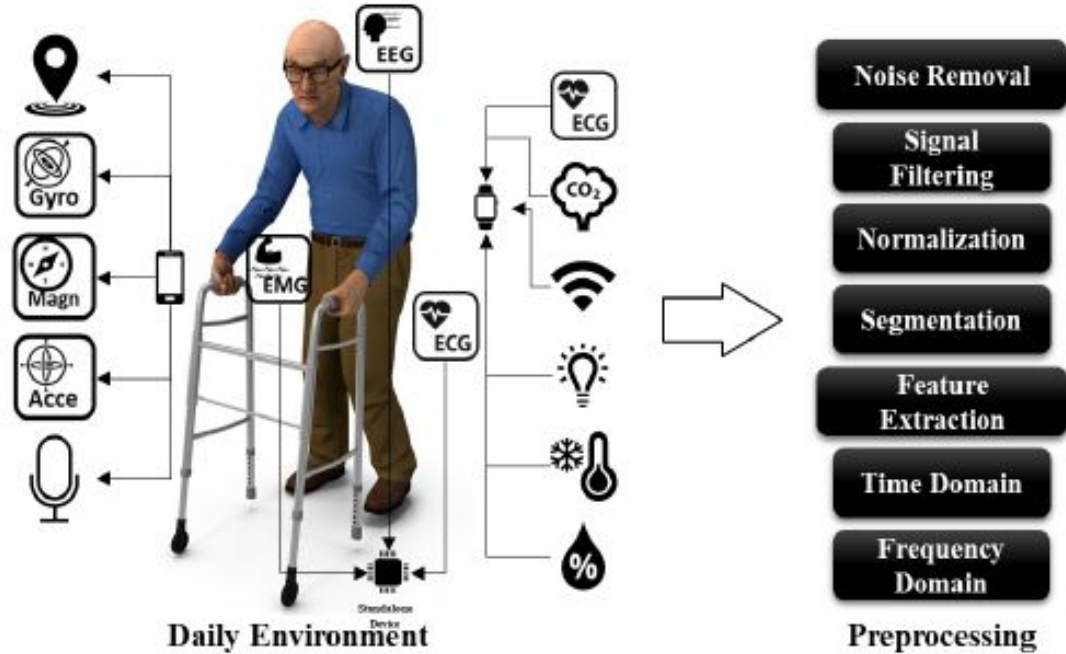


CERTH

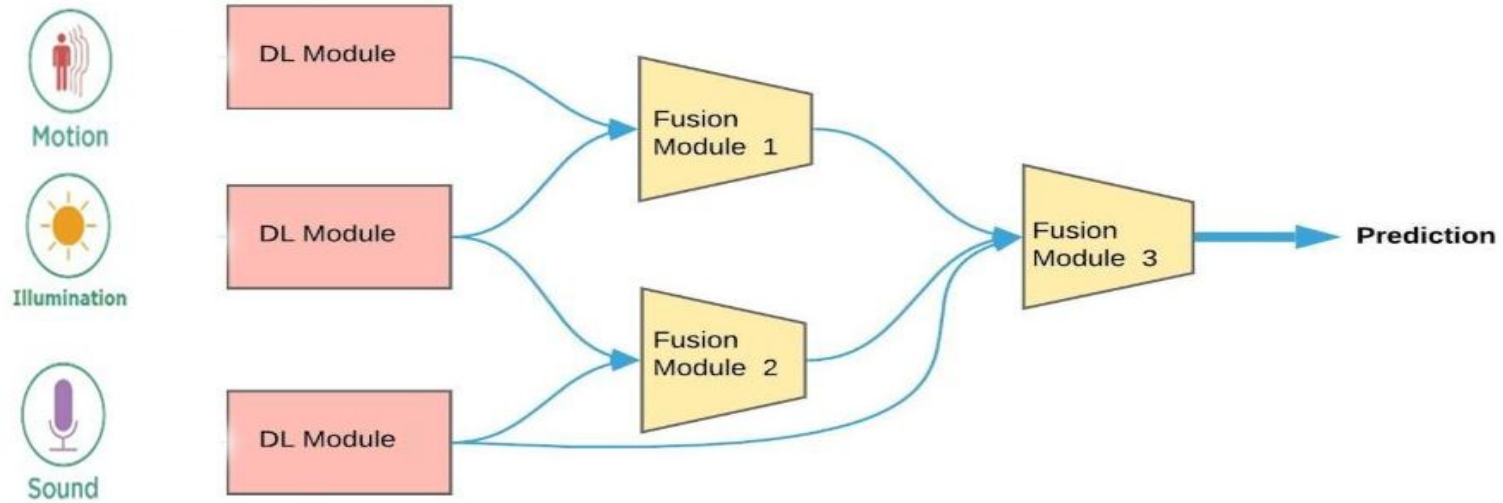
CENTRE FOR RESEARCH & TECHNOLOGY HELLAS



The Problem



Activity Recognition Using Multimodal Data



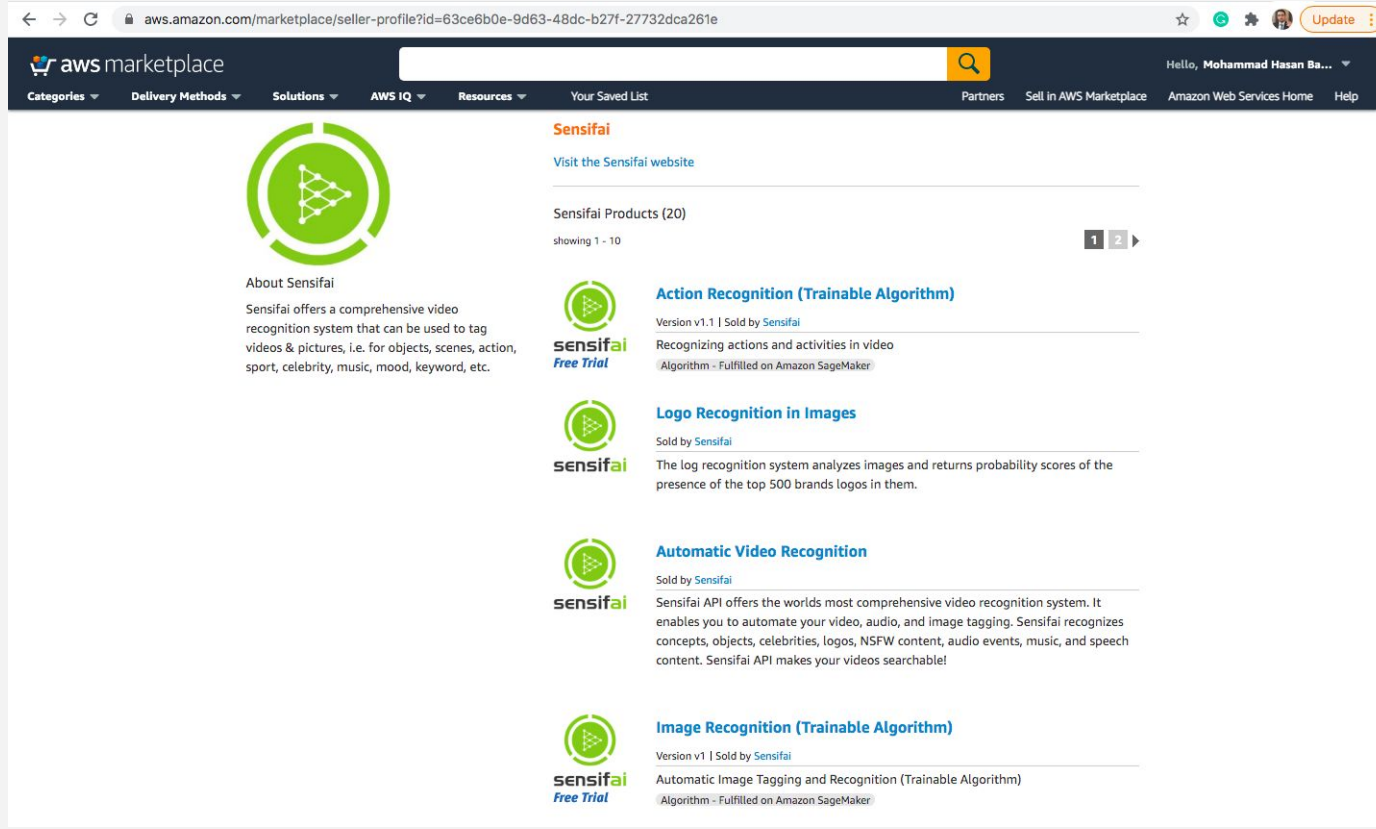
Fusion of different Modality data for activity recognition

Accurate without false Alarm

Robust against missed data in some modalities

The world's most comprehensive audio recognition system

([AWS-Sensifai](#))



The screenshot shows the AWS Marketplace seller profile for Sensifai. The page has a dark blue header with the AWS Marketplace logo, a search bar, and navigation links. The main content area is white and features the Sensifai logo, a description of the company, and a list of products. The products listed are Action Recognition (Trainable Algorithm), Logo Recognition in Images, Automatic Video Recognition, and Image Recognition (Trainable Algorithm). Each product listing includes a small Sensifai logo, the product name, version, and a brief description.

aws marketplace

Categories ▾ Delivery Methods ▾ Solutions ▾ AWS IQ ▾ Resources ▾ Your Saved List

Partners Sell in AWS Marketplace Amazon Web Services Home Help

Hello, Mohammad Hasan Ba...

Sensifai

[Visit the Sensifai website](#)

Sensifai Products (20)

showing 1 - 10

About Sensifai

Sensifai offers a comprehensive video recognition system that can be used to tag videos & pictures, i.e. for objects, scenes, action, sport, celebrity, music, mood, keyword, etc.

Action Recognition (Trainable Algorithm)

Version v1.1 | Sold by Sensifai

Recognizing actions and activities in video

Algorithm - Fulfilled on Amazon SageMaker

Logo Recognition in Images

Sold by Sensifai

The log recognition system analyzes images and returns probability scores of the presence of the top 500 brands logos in them.

Automatic Video Recognition

Sold by Sensifai

Sensifai API offers the worlds most comprehensive video recognition system. It enables you to automate your video, audio, and image tagging. Sensifai recognizes concepts, objects, celebrities, logos, NSFW content, audio events, music, and speech content. Sensifai API makes your videos searchable!

Image Recognition (Trainable Algorithm)

Version v1 | Sold by Sensifai

Automatic Image Tagging and Recognition (Trainable Algorithm)

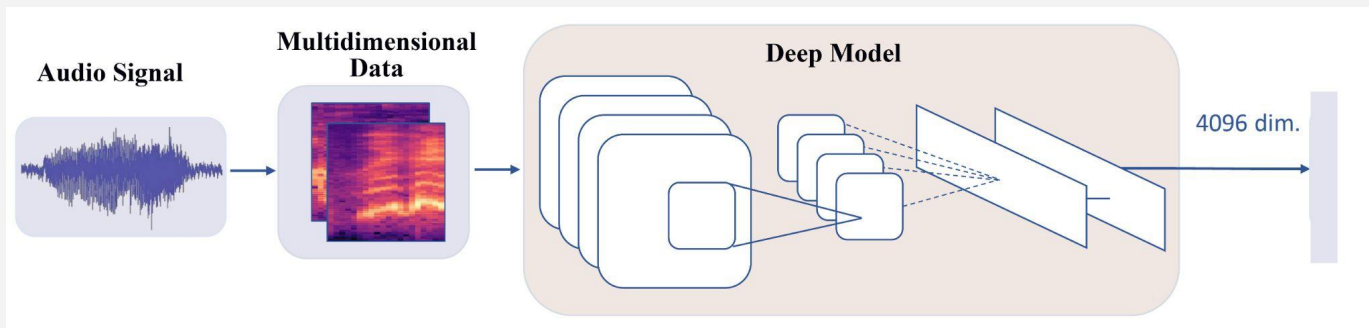
Algorithm - Fulfilled on Amazon SageMaker

Feature Extractor

Deep Learning based Feature Extractor for each modalities

Audio Embeddings: with deep back-bone trained on the indoor sound dataset robustly

- Audio Signals to Multidimensional data: STFT, Mel-spectrogram, Wavelet-spectrogram
- End-to-end audio event recognition: AcINet, AcISincNet, DENet , and SoundNet



Our Audio event classifier on the AWS marketplace ([AWS-Sensifai](#))

Our deep-learning-based environmental audio classifier recognizes hundreds of different sound categories

Sensifai AI-powered Multimodal Event Recognition

**Feature
Extractor**

**Novel Deep learning based
feature extraction**

**Multimodal
Feature Fusion**

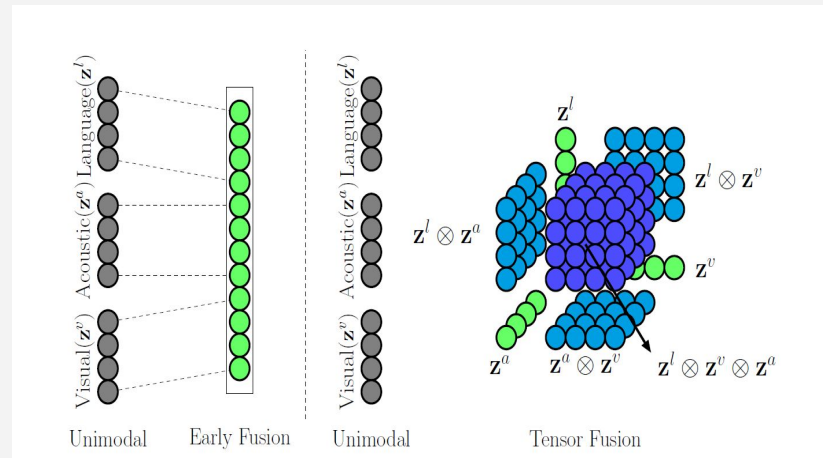
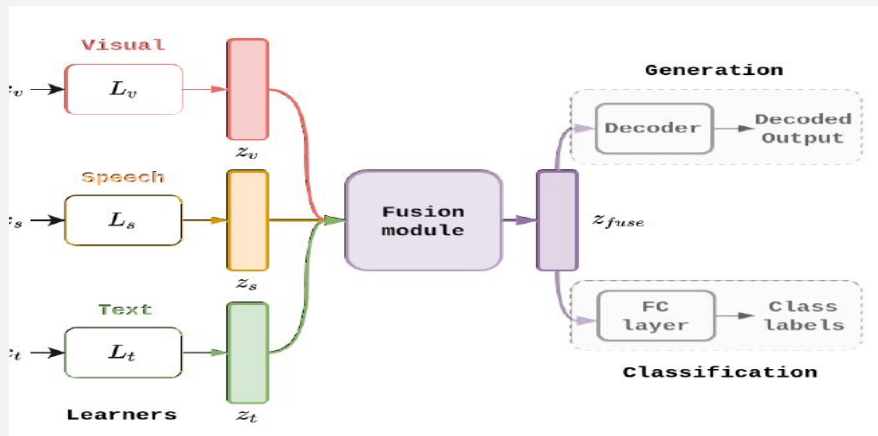
**SOTA solution for
Multimodal Fusion**

Classifier

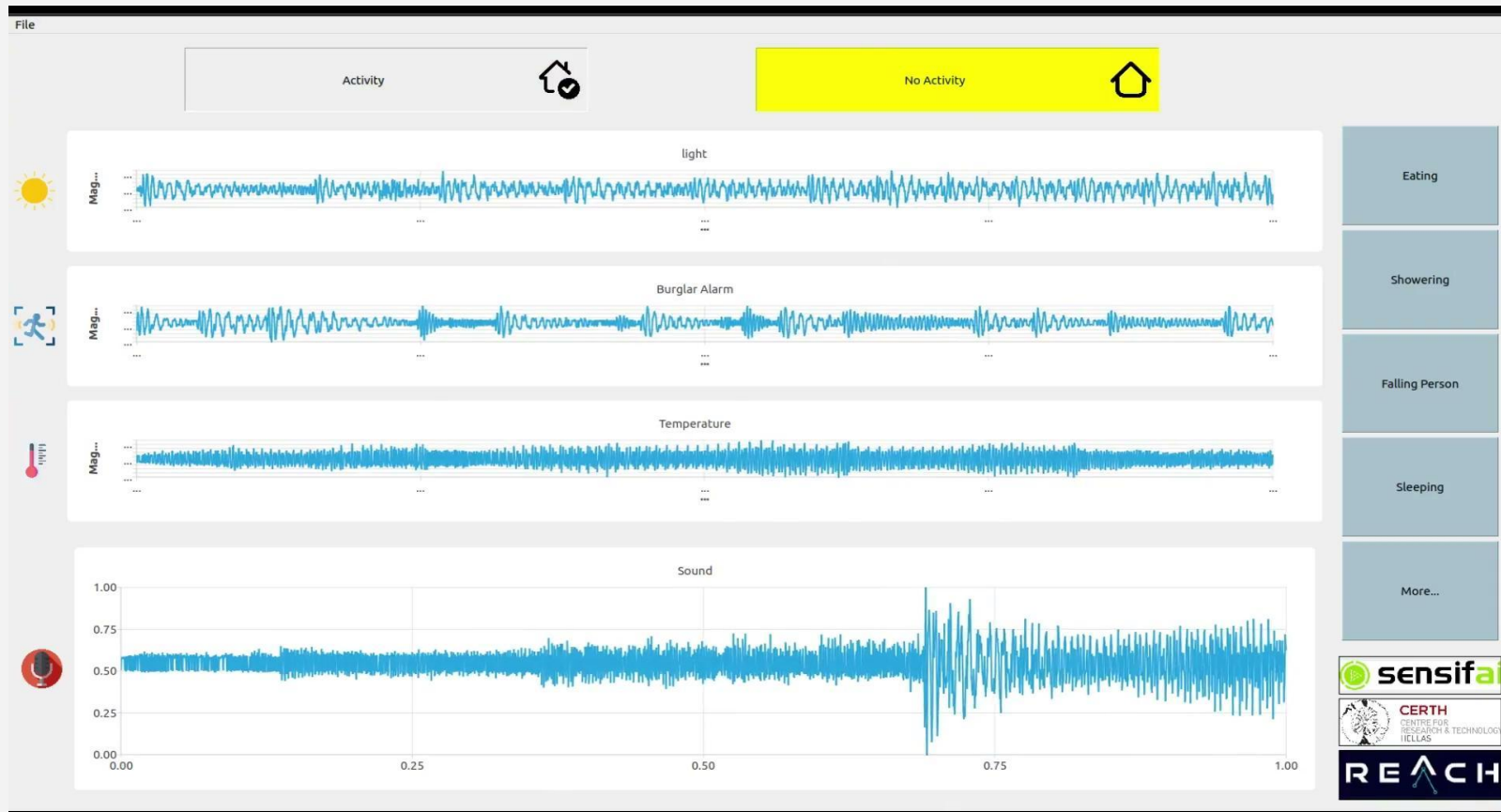
**Deep learning based
Classifier**

Multimodal deep Fusion

- Low Rank Multimodal Fusion (LMF)
- Fusion Tensor Fusion Network (TFN)
- Attention based Fusion,
- GAN Based Fusion
- Bilinear Pooling-based Fusion



Mock-up



Quality Assurance

1. Determining KPIs by the dataset provider
 - Accuracy
 - Delay
2. Determining independent dataset and Testing on them
3. Adhoc checks by human operator

Scalability

The solution is **highly scalable** and can be used in surveillance based systems in different applications, such as

- **Disabled & Elderly Assisted living in Smart Homes**
- **Child care**
- **Workplace inspection**

Required Resources



Development (4 months)

3 Scientist/developers
EUR 100K

Scale up (24 Month)

8 Scientists/business
EUR 1M

A great team led by internationally award winning founders



Hasan Bahari

CEO
PhD at **KU Leuven**
and **MIT**



Luc Van Gool

Head of Research
Prof. and head of computer vision
at **ETHZ**



Ali Diba

CTO
Scientist and Researcher at
KU Leuven

KU LEUVEN