AI-Powered
Multimodal Event Recognition (MER)

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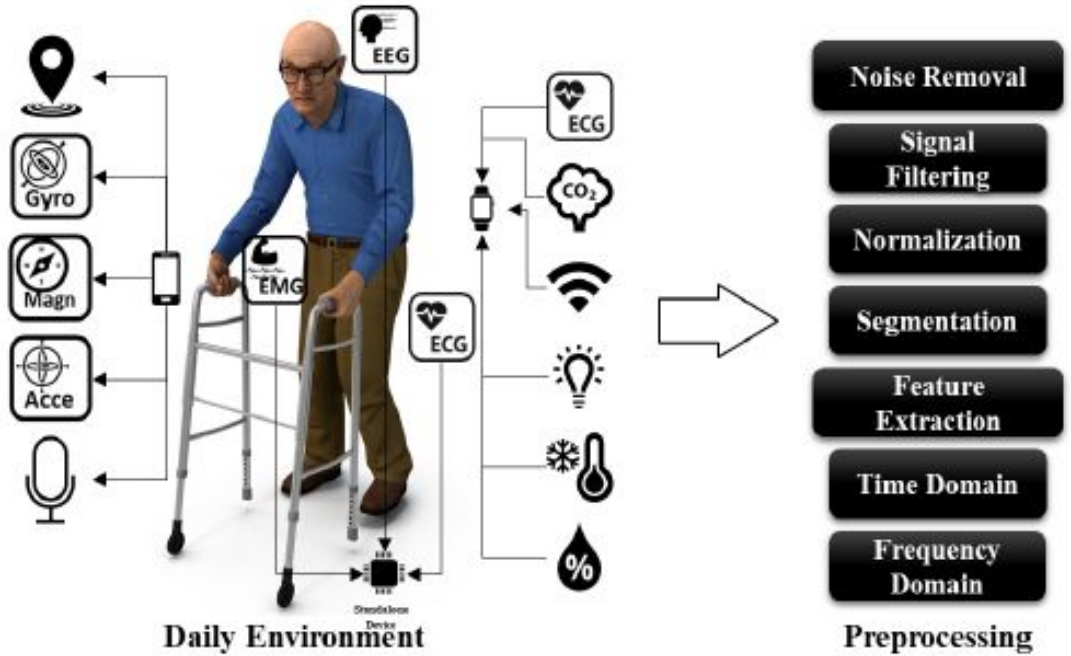
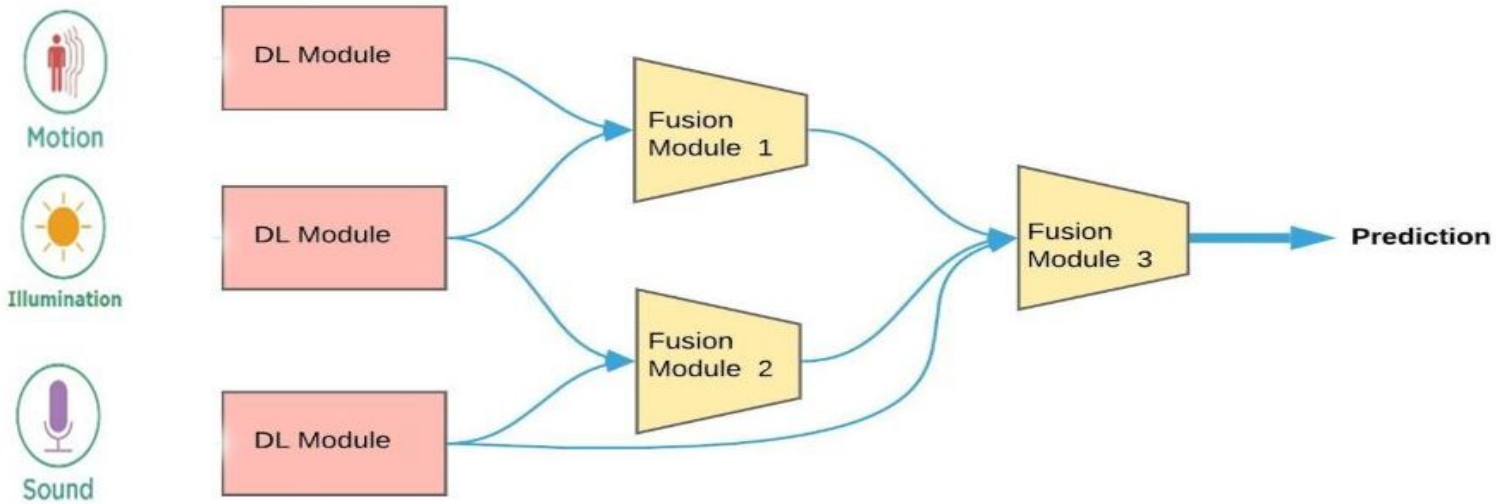
The Problem



Activity Recognition Using Multimodal Data



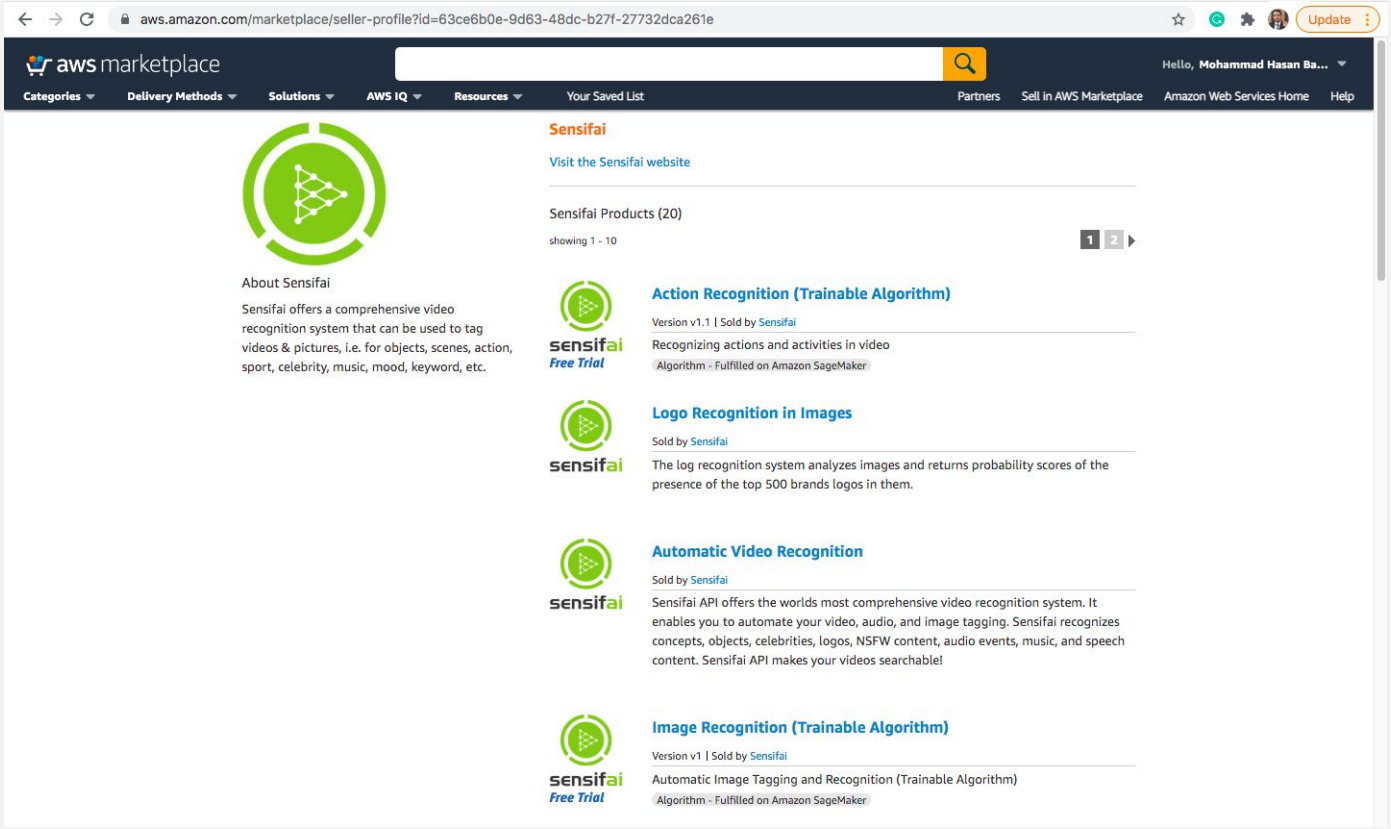
Fusion of different Modality data for activity recognition

Accurate without false Alarm

Robust against missed data in some modalities

The world's most comprehensive audio recognition system

([AWS-Sensifai])

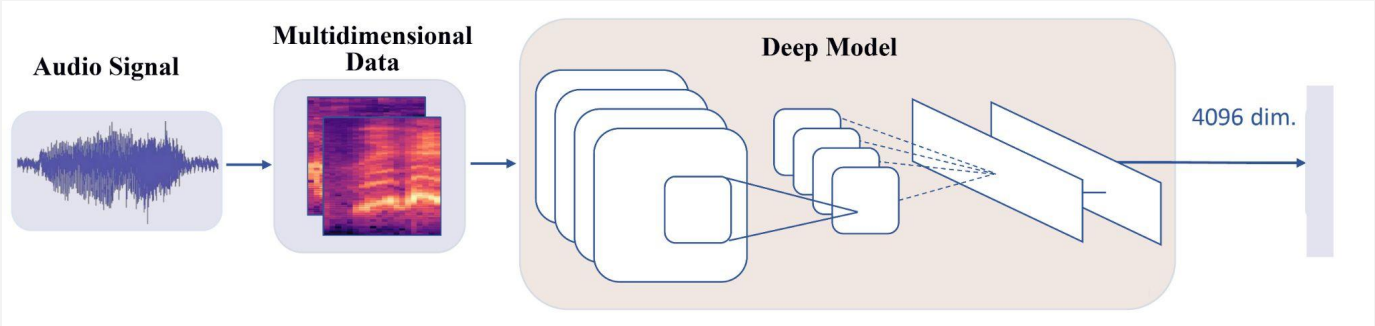


Feature Extractor

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: AclNet, AclSincNet, 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

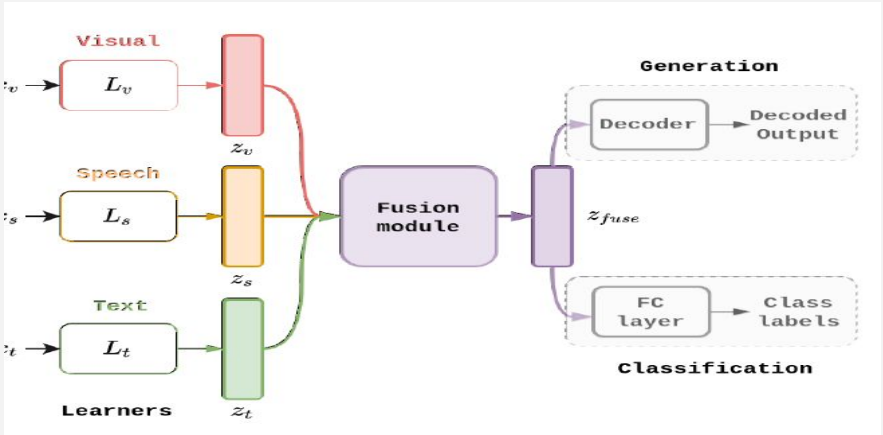
SOTA solution for Multimodal Fusion

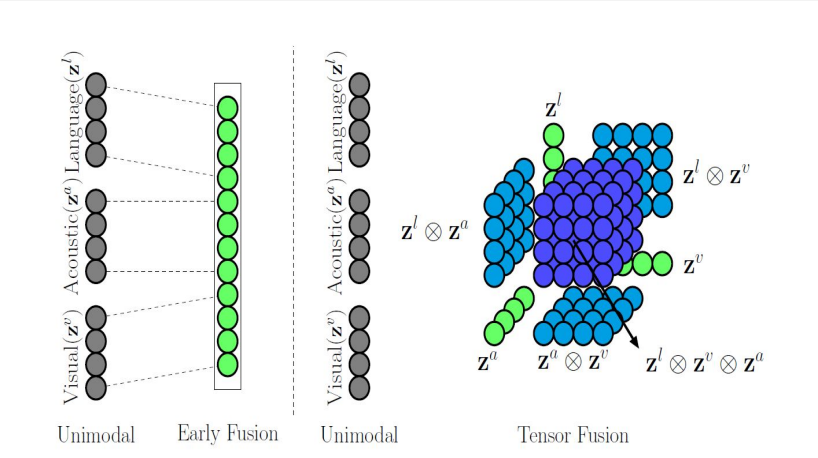
Classifier

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


File
Activity
No Activity
light
Mag...
Burglar Alarm
Mag...
Temperature
Mag...
Sound
1.00
0.75
0.50
0.25
0.00
0.00
0.25
0.50
0.75
1.00
Eating
Showering
Falling Person
Sleeping
More...
sensifai
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REACH

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

3 Scientist/developers
EUR 100K

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