AUDIO-VISUAL EMOTIONAL RECOGNITION

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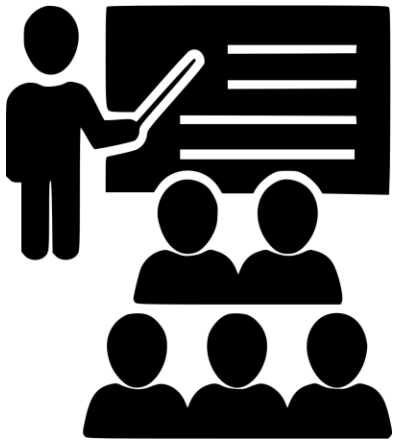
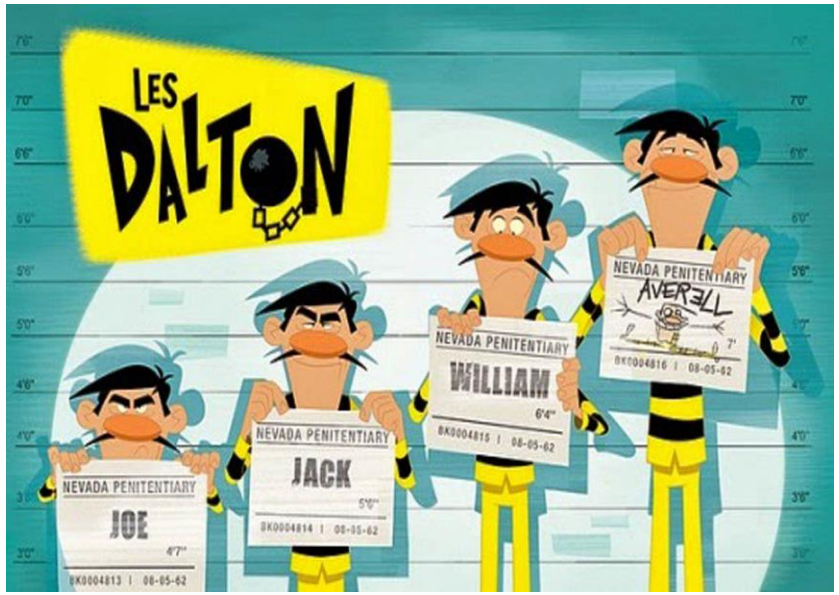
Content

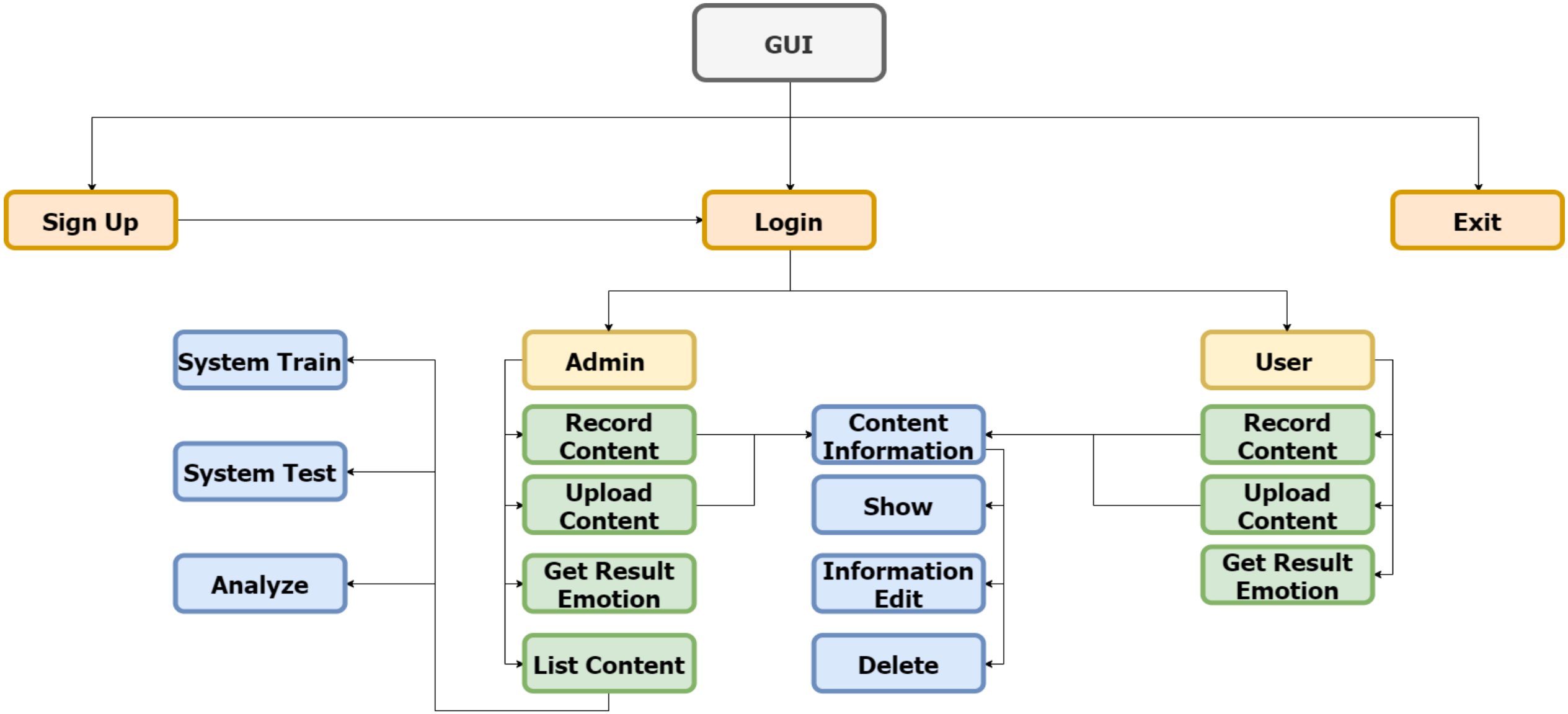
Problem



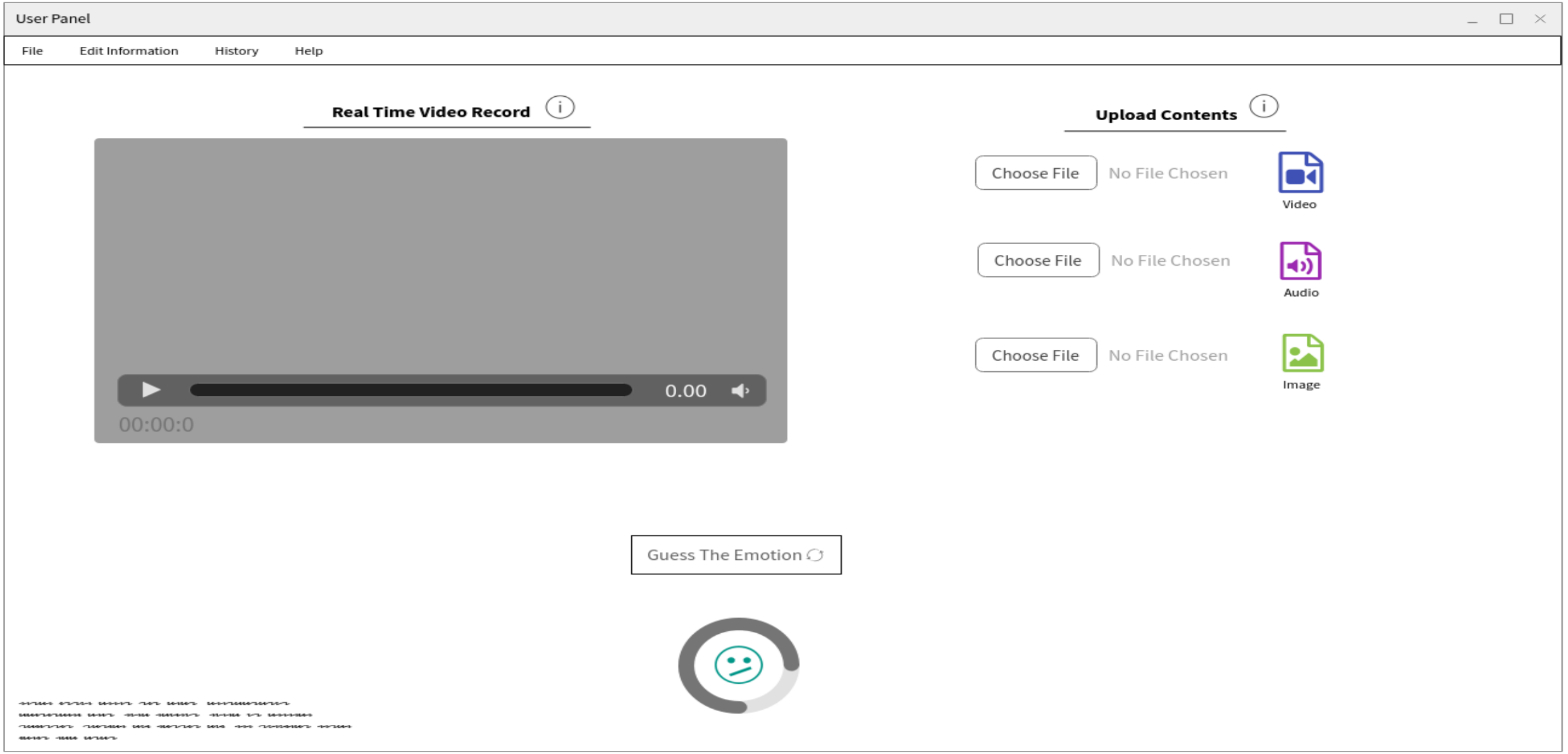
- Detecting the emotion of forensic offenders.
- Analysis of customer satisfaction of any company.
- Satisfaction analysis of students in online/traditional education.
- Analysis of the emotions of candidates in job interviews.



GUI Work Breakdown Structure



GUI Design


User Panel
File
Edit Information
History
Help
Real Time Video Record
0.00
00:00:0
Upload Contents
Choose File
No File Chosen
Video
Choose File
No File Chosen
Audio
Choose File
No File Chosen
Image
Guess The Emotion

Project Parts

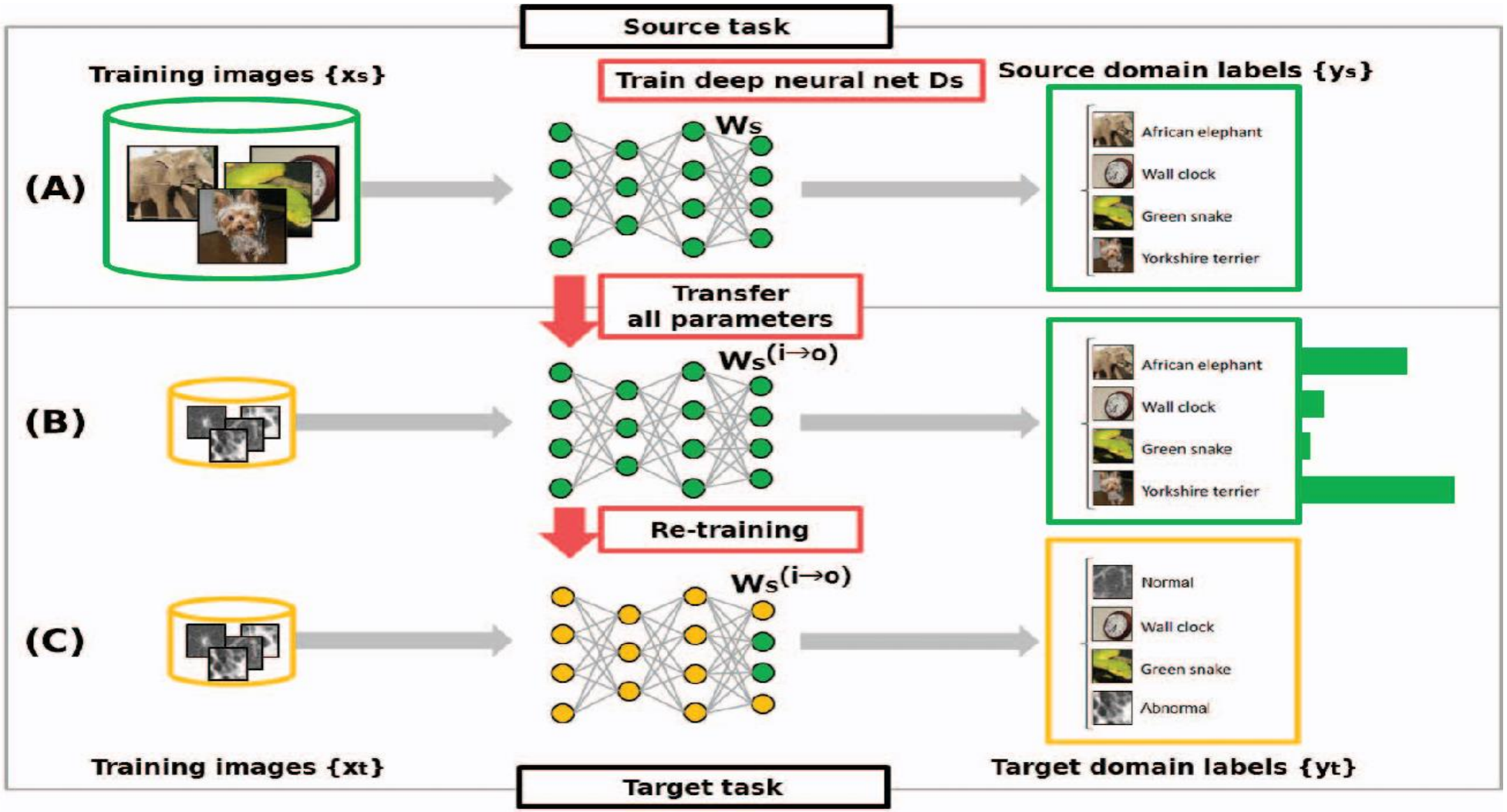
Audio Part

- **Machine Learning Techniques**
  - Multi-Layer Perception Classifier
  - Linear Discriminant Classifier
  - K-Nearest Neighborhood
  - Support Vector Classifier
- **Deep Learning Technique**
  - **Preprocessing**
    - Split frame for transfer learning
  - **Transfer Learning**
    - AlexNet Model

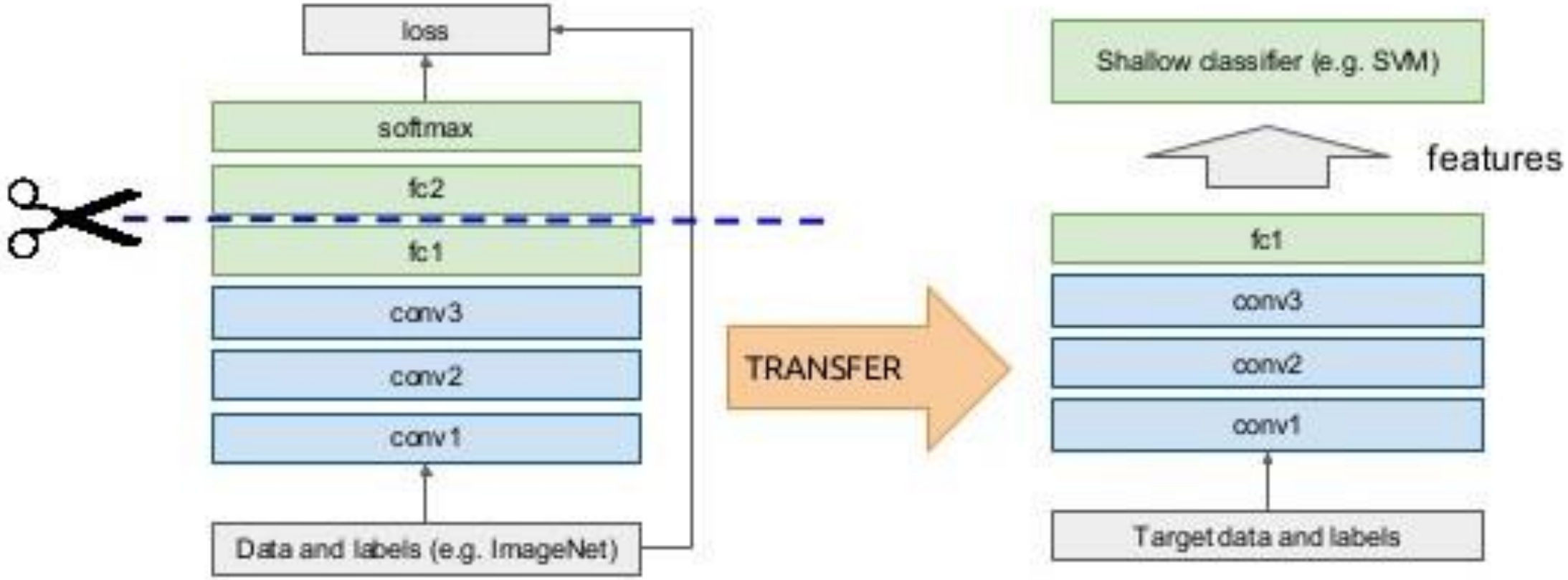
Visual Part

- **Preprocessing**
  - Face Detection & Crop
  - Resize
- **Deep Learning Techniques**
  - **Transfer Learning**
    - C3D Model
  - **Deep Feature Extraction**
    - Support Vector Machine
    - K-Nearest Neigborhood
    - Random Forest
    - Decision Tree

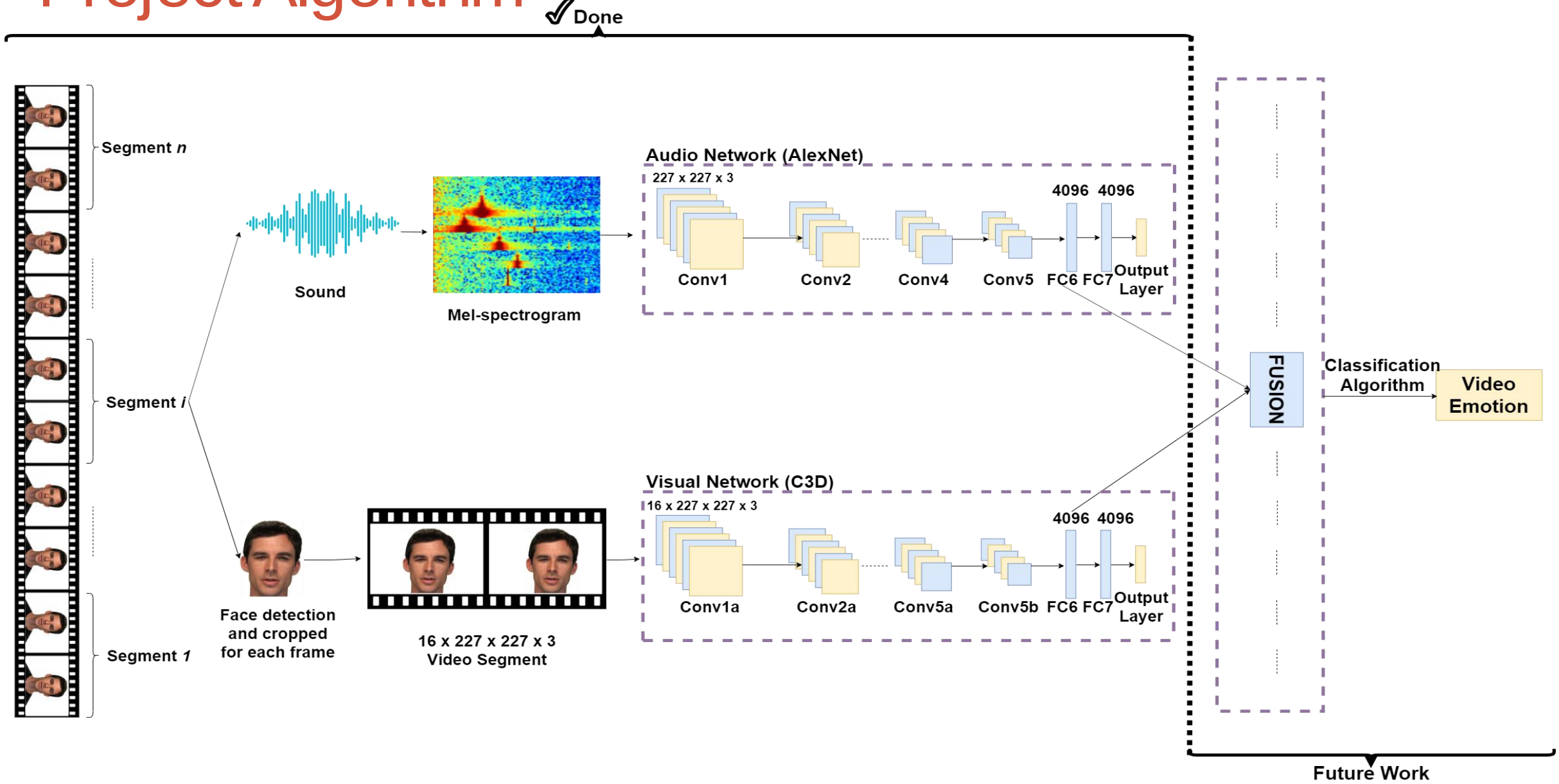
Used Algorithms (Transfer Learning)



Used Algorithms (Deep Feature Extraction)



Project Algorithm



Audio Part Results

Machine Learning			Transfer Learning (AlexNet)	
Dataset	**Classifier**	**Accuracy (%)**	**Dataset**	**Accuracy (%)**
Ravdess	MLPC	41.11	Ravdess	**84.65**
	LDC	**42.16**		
	KNN	28.57		
	SVC	36.93		
Savee	MLPC	60.42		
	LDC	50.0		
	KNN	54.17		
	SVC	**64.58**		

Visual Part Results

Deep Feature Extraction (C3D Model)			Transfer Learning (C3D Model)	
Dataset	**Classification Algorithm**	**Accuracy (%)**	**Dataset**	**Accuracy (%)**
Ravdess	SVM	90.45	Ravdess	**93.94**
	KNN	86.98		
	RF	**95.39**		
	DT	69.51		

Conclusion

Within the scope of senior projects, emotion recognition process has been carried out separately from audio and video.

In the audio part, machine learning and deep learning algorithms are used. As a result of the studies, it was seen that transfer learning obtained better accuracy.

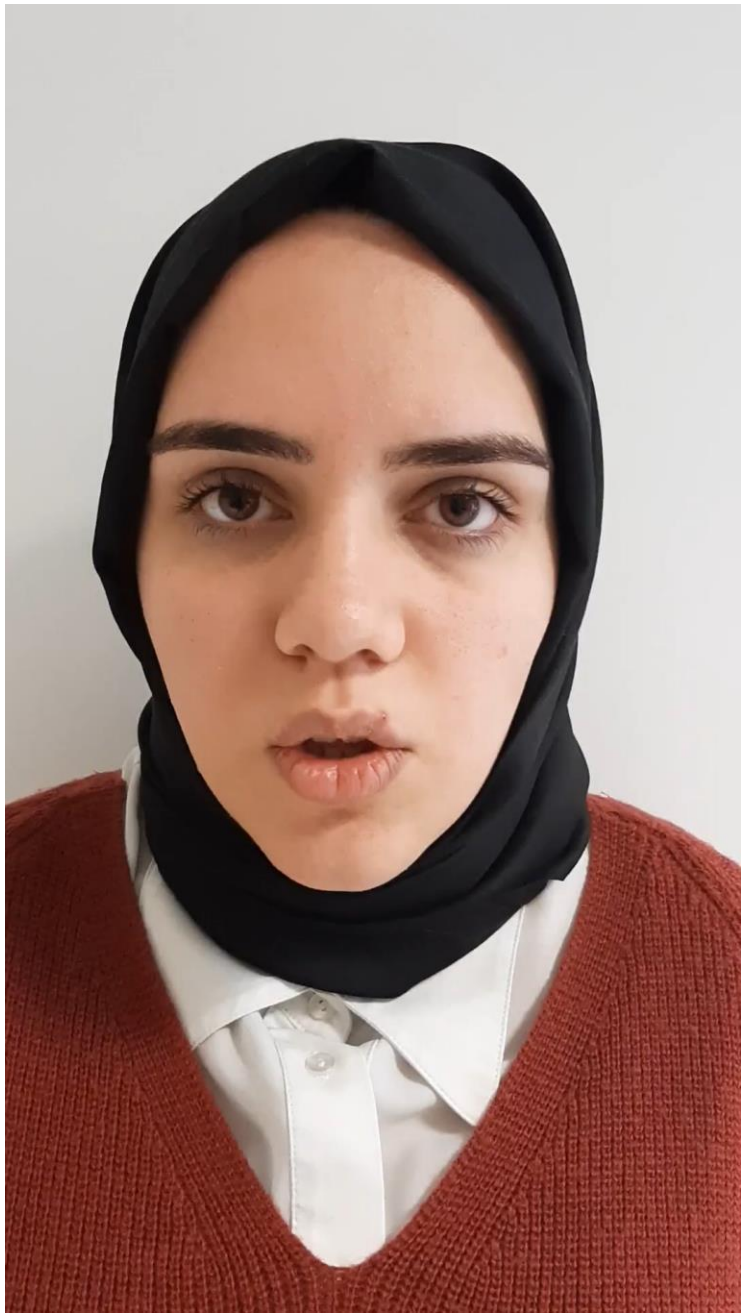
In the visual part, transfer learning and deep feature extraction from deep learning techniques were applied. Deep feature extraction and classification of the applied techniques produced better accuracy than transfer learning.

In the next section, future works are shown.

Future Works

- Test
- Fusion Part
- Own Dataset
- GUI Implementation
- TÜBİTAK 2242 - Üniversite Öğrencileri Araştırma Proje Yarışmaları
- Notification for The 27th IEEE International Conference on Image Processing (ICIP 2020)

DEMO



QUESTIONS ?