# Emotion Classification for SEP CV&DL

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## Abstract

*The ABSTRACT* [1].

## 1. Introduction

Figure 1 depicts an overview of our time schedule for the final project.

The structure of this report is arranged as follows. Section 2 contains the related work of our research. Section 3 provides the datasets we used, the model architecture, and preliminary evaluation results of our model.

## 2. Related Work

## 3. Approach

### 3.1. Dataset

Firstly, for all the image data from the training dataset [1, 2], we filter out neutral instances from the original dataset, the emotion labels are denoted as 1 (Surprised), 2 (Fearful), 3 (Disgusted), 4 (Happy), 5 (Sad), and 6 (Angry) for simplicity. Afterward, we transform and resize the images to (64,64).

### 3.2. Model Architecture

We implemented an emotion-classification model with 3 convolution layers.

We add a `dropout` layer to prevent overfitting. In order to find the best hyperparameter configuration (see Tab. 1 for details) of the model, we utilize the parameter grid from sklearn [2].

### 3.3. Preliminary Results

For evaluation, we use the metric accuracy.

| Hyperparameter | Configuration |
|---|---|
| Learning rate | {0.1, 0.01, 0.001, 0.0001} |
| Batch size | {8, 16, 32, 64} |
| Dropout rate | {0.5} |
| Epoch | {20} |
| Early stopping | {True, False} |
| Patience | {5} |

Table 1. Explored hyperparameter space for our model

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[1] Equal contributions listed by alphabetical order of surnames, see Sec. 4 for details.

[2] https : / / scikit – learn . org / stable / modules / generated/sklearn.model_selection.ParameterGrid. html
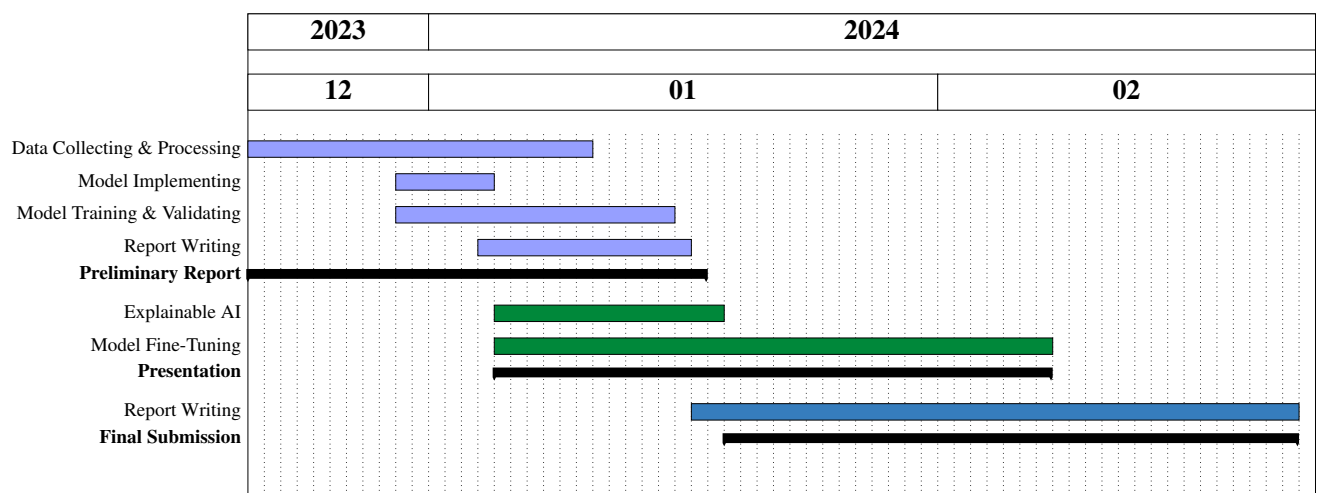
Figure 1. Overview of the time schedule for the final project

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## Supplementary Material

## 4. Author Contributions

Every author did the literature research and contributed to the writing of the paper.

- **Tanja Jaschkowitz**
- **Leah Kawka** collected the training data
- **Mahdi Mohammadi**
- **Jiawen Wang** implemented the model architecture, training infrastructure, and optimization strategies.

## Acknowledgements

## References

[1] Shan Li and Weihong Deng. Reliable crowdsourcing and deep locality-preserving learning for unconstrained facial expression recognition. *IEEE Transactions on Image Processing*, 28 (1):356–370, 2019. 1

[2] Shan Li, Weihong Deng, and JunPing Du. Reliable crowdsourcing and deep locality-preserving learning for expression recognition in the wild. In *2017 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 2584–2593. IEEE, 2017. 1