

ML2 Group 4 Project Proposal

- What problem did you select and why did you select it?

The problem we choose is face mask detection using CNN and deep learning. After covid-19, some places kept their mask rules with themselves like in hospitals, doctor's offices and some other places people should still wear their masks and there is a strict rule of that. So, we found this problem interesting to use deep learning (Neural Network) to solve it. There is a dataset in Kaggle that we found which have the pictures with people with or without masks. We are going to apply deep learning to detect it.

- What database/dataset will you use? Is it large enough to train a deep network?

We use the dataset from [Kaggle](#). The dataset has 12000 images of people with mask divided into test and train and validation. It has three target classes: masked_weared_incorrect, without_mask and with_mask. Dataset is imbalanced and further oversampling methods are likely to be implemented.

- What deep network will you use? Will it be a standard form of the network, or will you have to customize it?

We will primarily use CNN Network and customize it according to the case study.

- What framework will you use to implement the network? Why?

We have not decided yet, but it will be TensorFlow Keras. Tensorflow is one of the most popular frameworks for deep learning. It is used to rapid deployment of new algorithms. It also provides integration with other TensorFlow models.

TensorFlow is one of the most preferred deep learning frameworks as it is Python-based, supported by Google, and comes loaded with top-notch documentation and walkthroughs to guide. Keras is easy to understand, and it has built in supports for understanding and learning.

- What reference materials will you use to obtain sufficient background on applying the chosen network to the specific problem that you selected?

Primarily our target is to improvise one existing solution of this classification problem in [kaggle](#). Our target is to more accurately classify the peoples who are not wearing the mask.

- How will you judge the performance of the network? What metrics will you use?

Accuracy and false positive rates can be used as a metric of performance. A lower FPR would be preferable for this task as people with no mask or incorrectly worn mask would be a threat to general public.

- Provide a rough schedule for completing the project

Week 1: Preprocessing

Week 2: Modeling

Week 3: Hyperparameter tuning and advanced preprocessing if needed

Week 4: Improve the model

Week 5: Finalize the model and report writing

Week 6: Final presentation

References:

1. <https://marutitech.com/top-8-deep-learning-frameworks/>
2. [face-mask-detection CNN | Kaggle](#)