**COMP 6721 Project**

**Face Mask Classification - CNN**

TEAM NAME: **NS\_09**

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| Name | ID | Work |
| Smit Desai | 40120178 | Data collection & preprocessing.  Model building and training |
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**1. PHASE I**

**1.1 DATASET**

**COLLECTING DATA**

As outlined in the project description, the model had to classify images into 4 different classes: Cloth-Mask, Surgical-Mask, FFP2-Mask and No-Mask. The dataset has a total of 1988 images. Here are some statistics about the dataset:

Chart, pie chart

Description automatically generatedChart, pie chart

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Source:

1. Cloth-Mask, Surgical-Mask images were collected from Google-images.
2. FFP2-Mask images were collected from Shutterstock.
3. No-Mask images were collected from 2 different Kaggle datasets
   1. <https://www.kaggle.com/vinaykudari/facemask> by Vinay Kudari
   2. <https://www.kaggle.com/spandanpatnaik09/face-mask-detectormask-not-mask-incorrect-mask> by Spandan patnaik

(Please see the attached reference files to view every image-source )

**PREPROCESSING**

The following preprocessing steps were taken:

1. **Resize:** In order to feed the images to the CNN network, they were resized (64 px, 64 px)
2. **Horizontal-flips:** To increase randomness, images were flipped horizontally with a probability of 0.5
3. **Conversation to tensor:** Converts the images into an array of numbers, called torch tensor. Each pixel of the input RGB image is divided into three different pixels- red, blue and green. This creates three different images. For each generated image, the pixel value is divided by 255 to range the pixel range from [0 255] to [0 1]
4. **Train-Test split:** The data set is spilt into 2 categories during runtime. The train dataset has 1690 images (85%) whereas the test dataset has 298 images (15%)
5. **Batch-loading:** Finally, images from both categories are loaded into a batch of size 32 and are randomly shuffled.