ClassiFiconHackathon2021

Group 39

- **Raktim Gautam Goswami**
- **Sanskar Nanegaonkar**
- **Vaibhaw Khemka**
- **Stavan Christian**

Problem Statement

- To classify into positive smile or not smile
- To classify into positive smile or negative smile

Basic Approach

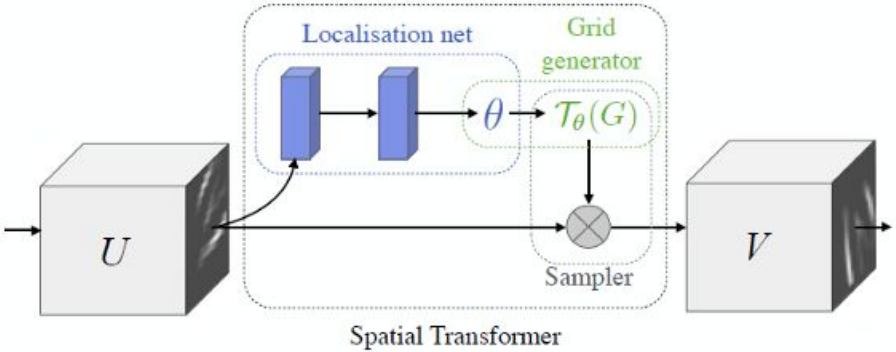
- Dataset Cleaning
- Selection of DNN model
- Accuracy metrics
- Comparison of employed model with standard SOTA models

Uniqueness

- Augmentations specific to images
- Class skewness removed
- Less number of parameters
- Implying less inference time
- Feasibility with real-time applications
- Explainability

Implementation

- Model employed:-
  - Convolutional model with Spatial transformers



  - VGG16
- Augmentation techniques used

Original Image

Random Brightness

Affine Translate

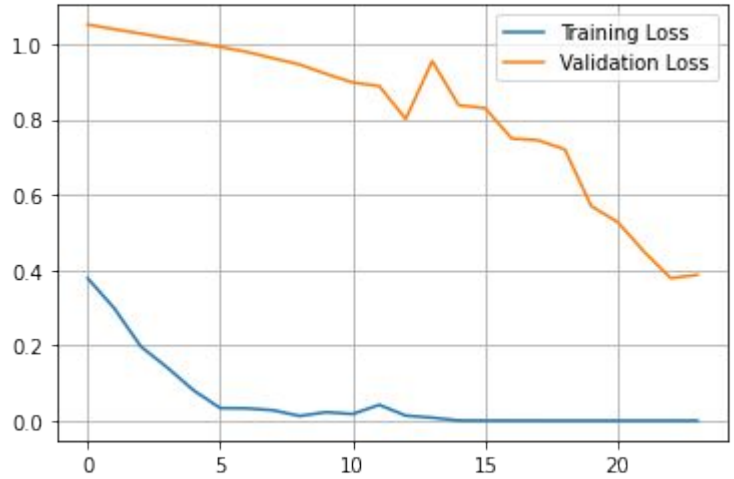
Vertical Flip

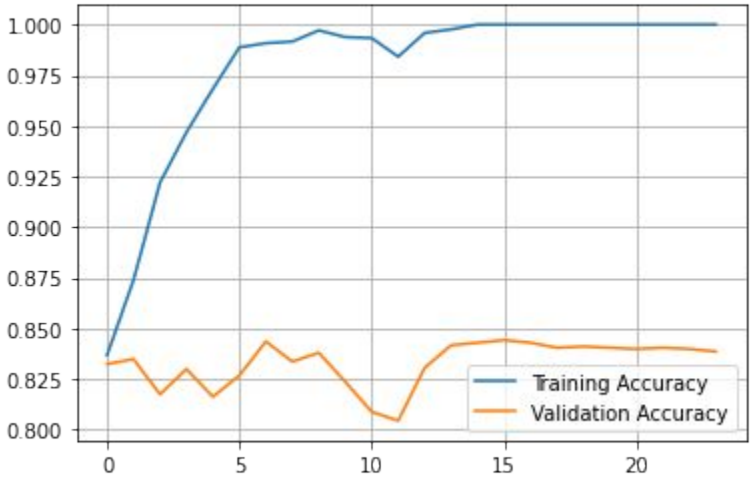
Affine Shear

Random Rotate

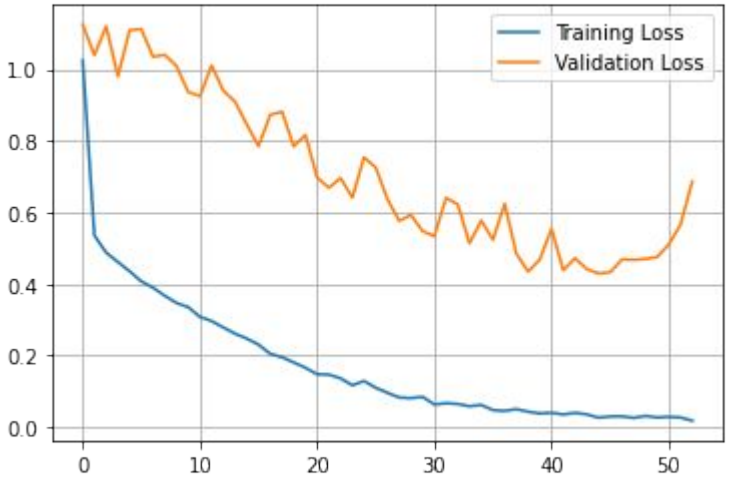
Result & ANalysis

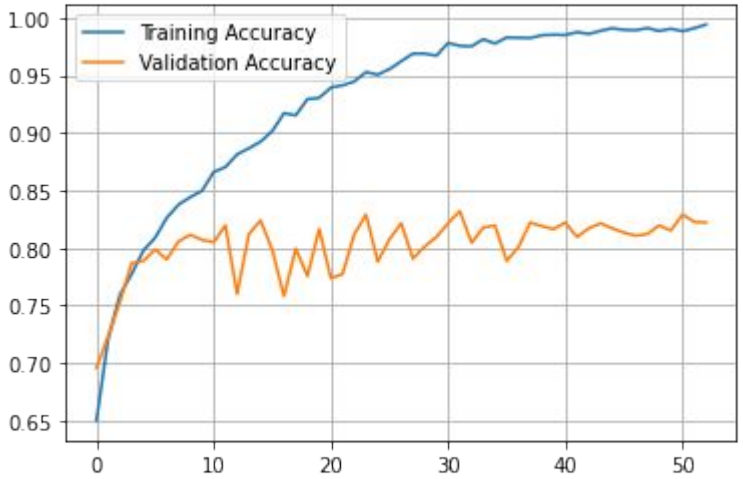
- Classification between smile and no smile
  - VGG16
    - 100 million parameters
    - Transfer learning used on the last layers
    - Adam optimizer with initial learning rate 0.0001
    - Binary cross entropy objective function



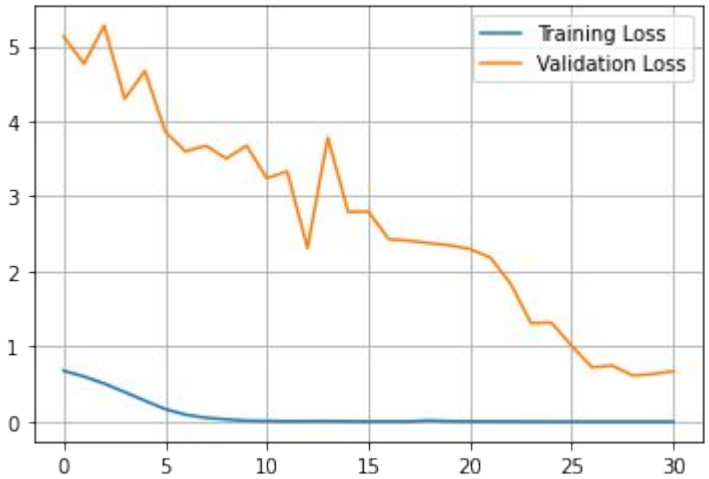


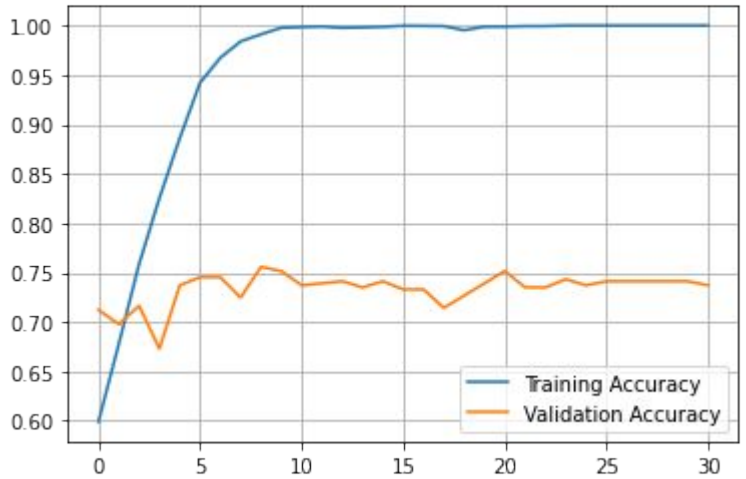
- CNN with spatial transformer
  - 700,000 parameters
  - Adam optimizer with initial lr of 0.0001
  - Binary cross entropy objective function



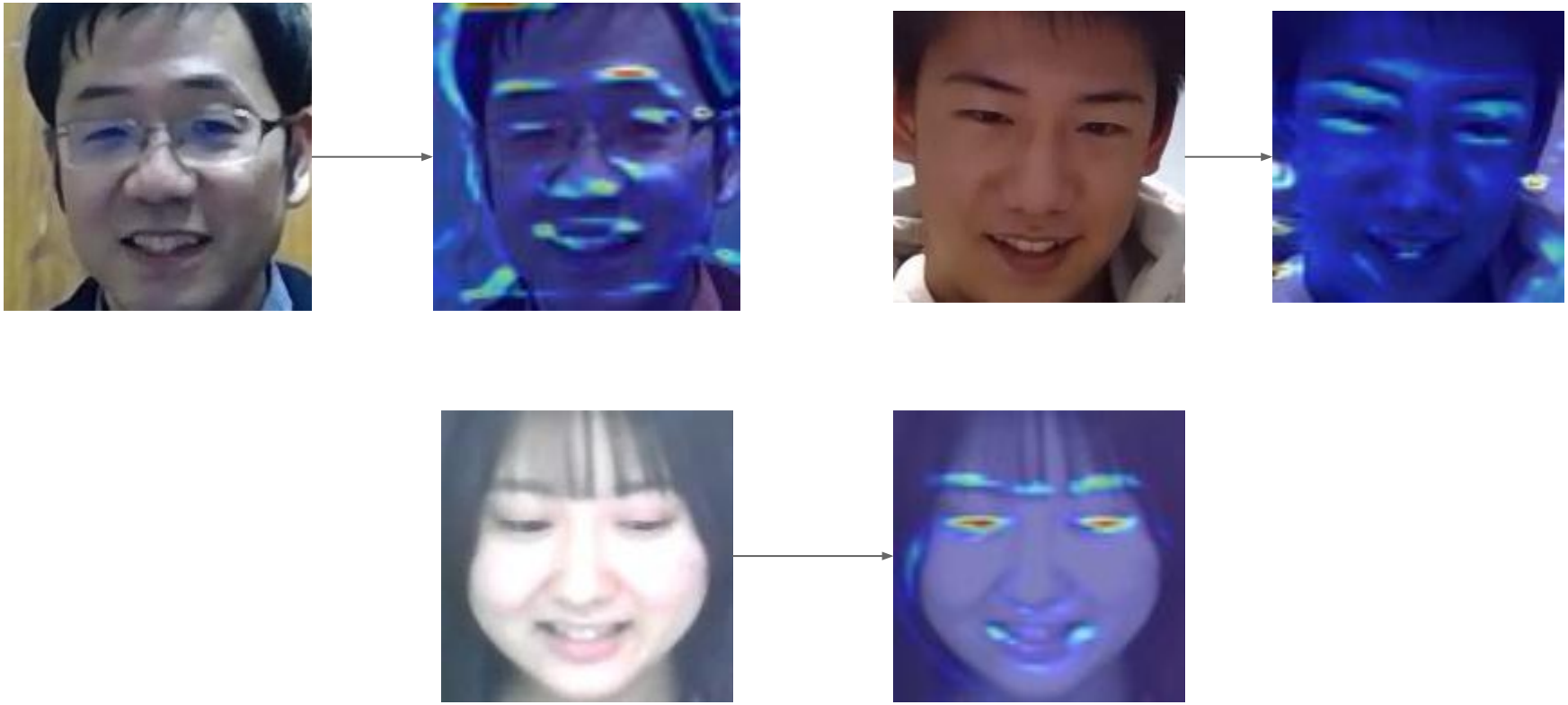


- Classification between positive and negative
  - VGG16
    - 100 million parameters
    - Full network trained
    - Adam optimizer with initial learning rate 0.00001
    - Binary cross entropy objective function





Gradient region



Github repository link

https://github.com/raktimgg/Epoch_Hackathon_Group39

Thank You!