Model Development Phase Template

Date	02 October 2024
Team ID	739759
Project Title	OptiInsight - Revolutionizing Ophthalmic Care With Deep Learning For Predictive Eye Disease Analysis
Maximum Marks	5 Marks

Model Selection Report

Major projects demonstrate strong proficiency in deep learning and its practical applications. Notable projects include *"Optiinsight: Revolutionizing Ophthalmic Care with Deep Learning for Predictive Eye Disease Analysis"* and *"Age and Gender Detection Using Deep Learning."* These initiatives showcase expertise in developing AI-driven solutions for healthcare and biometric advancements.

Model Selection Report:

Model	Description

VGG19	VGG19 is a deep convolutional neural network (CNN) architecture introduced by the Visual Geometry Group (VGG) at the University of Oxford. It was proposed in the 2014 paper *"Very Deep Convolutional Networks for Large-Scale Image Recognition"* by Simonyan and Zisserman. VGG19 is an extension of the VGG16 model, consisting of 19 layers, including 16 convolutional layers and 3 fully connected layers. **Key Features of VGG19:** 1. **Small Convolutional Filters (3x3):**

All convolutional layers use 3x3 filters with a stride of 1 and padding to maintain spatial dimensions.

Small filters allow the network to capture fine details and spatial hierarchies.

2. **Deep Architecture:**

   Comprising 19 layers, VGG19 is deeper than its predecessors, enabling the learning of more complex features.

   The architecture follows a uniform design: convolutional layers are stacked in increasing depth, followed by maxpooling layers.

3. **ReLU Activation:**

   Rectified Linear Units (ReLU) are applied after each convolutional layer to introduce non-linearity and accelerate convergence.

4. **Pooling Layers:**

   2x2 max-pooling layers with a stride of 2 reduce spatial dimensions, ensuring computational efficiency.

5. **Fully Connected Layers:**

   The network concludes with three fully connected layers, with the last layer using a softmax activation for classification.

6. **Weight Sharing:**

   The model leverages pre-trained weights on large datasets like ImageNet, making it suitable for transfer learning.