

# BE Project Weekly Progress Report

**Project Id** :- 21

**Project Title** :- AI/ML Based Deepfake Videos Detection

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## Weekly Report No:1

**Work Duration (Dates)** :- 12 Aug 2024 – 17 Aug 2024

**Work Done** :- Project planning and requirement gathering. Collected deepfake video datasets.

**Problem faced** :- Finding authentic and balanced datasets..

**Solutions Obtained** :- Merged multiple public datasets.

**References** :- Kaggle datasets, Deepfake Detection Challenge dataset.

## Weekly Report No:2

**Work Duration** (Dates) : - 19 Aug 2024 – 24 Aug 2024

**Work Done** : - Preprocessing video frames and data cleaning.

**Problem faced** : - High computational resources required.

**Solutions Obtained** : - Used frame extraction techniques and reduced video resolution.

**References** :- OpenCV Documentation..

## Weekly Report No: 3

**Work Duration** (Dates) : - 9 Sept 2024 – 14 Sept 2024

**Work Done** : - Feature engineering: extracting facial landmarks and embeddings.

**Problem faced** : - Noise in feature extraction.

**Solutions Obtained** : -Applied face alignment techniques..

**References** : -Dlib, Mediapipe documentation..

## Weekly Report No: 4

**Work Duration** (Dates) : - 23 Sept 2024 – 28 Sept 2024

**Work Done** : - Model exploration: CNN and LSTM based architectures

**Problem faced** : - Complexity in model selection.

**Solutions Obtained** : - Started comparative study between different architectures..

**References** :- Research papers on Deepfake detection.

## Weekly Report No: 5

**Work Duration** (Dates) : - 14 Oct 2024 – 19 Oct 2024

**Work Done** : - Built baseline CNN model for frame-wise classification.

**Problem faced** : - Overfitting during training.

**Solutions Obtained** : - Applied dropout layers and data augmentation.

**References** :- TensorFlow and Keras documentation.

### **Weekly Report No: 6**

**Work Duration** (Dates) : - 21 Oct 2024 – 26 Oct 2024

**Work Done** : - Model hyperparameter tuning.

**Problem faced** : - Slow convergence rate.

**Solutions Obtained** : - Optimized learning rate and batch size.

**References** : - Scikit-learn and Keras Tuner.

### **Weekly Report No: 7**

**Work Duration** (Dates) : - 18 Nov 2024 – 23 Nov 2024

**Work Done** : - Evaluated model performance with validation data.

**Problem faced** : - Class imbalance affecting results.

**Solutions Obtained** : -Used class weighting techniques.

**References** : -Model evaluation articles..

### **Weekly Report No: 8**

**Work Duration** (Dates) : - 25 Nov 2024 – 30 Nov 2024

**Work Done** : - Started finalizing model training and optimization..

**Problem faced** : - Video-level decision making was inaccurate..

**Solutions Obtained** : - Aggregated frame predictions to video-level voting.

**References** : - Deepfake detection research papers.

Dr. A.D.Waghmare.  
Sign of Project Gudie.