

Weekly Progress Report - 4

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Project Title	Combating Digital Misinformation: Deepfake Detection Using Deep Neural Networks
Name of the Supervisor (Mentor) at PDEU	Dr. Samir Patel
Week Number	Week 4

Progress made in Week:

This week, we concentrated on setting up the foundation for model development, designing the detection pipeline, and preparing for evaluation:

- Model Research & Selection:**

Conducted in-depth research on advanced CNN architectures like XceptionNet and EfficientNet for spatial feature extraction. Additionally, explored integrating RNN/LSTM layers to capture temporal relationships between video frames for more accurate detection.

- Pipeline Design & Integration:**

Designed a modular deep learning workflow that connects all stages: data preprocessing, model training, and evaluation, ensuring scalability and easier debugging in later stages.

- Evaluation Metrics Setup:**

Identified and finalized key performance metrics, including Accuracy, Precision, Recall, F1-Score, and ROC-AUC, to comprehensively assess model reliability and robustness.

- Initial Model Implementation:**

Built and tested a baseline CNN model using a subset of the processed dataset. Early testing provided insights into data distribution and potential improvements in preprocessing techniques.

- Future Planning:**

Planned the next steps, such as hyperparameter tuning, training optimization, experimenting with combined CNN-LSTM models, and implementing visualizations to highlight manipulated regions in videos for explainability.

Hetanshi Bhatt	Kunal Solanki	Samir Patel
		
Name and Signature of Student 1	Name and Signature of Student 2	Name and Signature of Supervisor (Mentor)

