

## Weekly Progress Report - 9

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<b>Project Title</b>	Combating Digital Misinformation: Deepfake Detection Using Deep Neural Networks
<b>Name of the Supervisor (Mentor) at PDEU</b>	Dr. Samir Patel
<b>Week Number</b>	Week 9

### **Progress made in Week:**

The week was fully dedicated to executing the definitive training run for the project's core detection model, leveraging the optimization results from the previous week.

### **Final Training Run with Optimized XceptionNet**

- **Model Used:** Fine-tuned XceptionNet.
- **Configuration:** The final, full-epoch training run was conducted using the **best set of hyperparameters** (Learning Rate, Weight Decay, and Augmentation strengths) identified by the Optuna study in Week 8.
- **Objective:** To maximize the model's performance and generalization capacity on the training data.
- **Performance Achievement:** The optimal parameters successfully utilized the model's capacity, resulting in strong, stable validation performance:
- **Artifact:** The final best-performing model weights were saved (final\_xception\_optuna.pth) and are ready for the crucial final evaluation stage.

 Evaluation Results

Test Loss: 0.1966

Accuracy: 0.9552

AUC: 0.9908

Confusion Matrix:

[[1416 84]

[ 50 1441]]

Classification Report:

	precision	recall	f1-score	support
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Real	0.9659	0.9440	0.9548	1500
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Fake	0.9449	0.9665	0.9556	1491
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accuracy	0.9552	2991
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macro avg	0.9554	0.9552	0.9552	2991
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weighted avg	0.9554	0.9552	0.9552	2991
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Hetanshi Bhatt	Kunal Solanki	Samir Patel
		
Name and Signature of Student 1	Name and Signature of Student 2	Name and Signature of Supervisor (Mentor)