

WEEK 1

Date/Day	Work Done	Hours Worked	Remarks by Intern
02.03.2024	Kickoff meeting with project supervisor, discussed objectives and requirements	3	Got clear direction on project scope and deliverables
03.03.2024	Researched latest deepfake detection techniques and papers	5	

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WEEK 2

Date/Day	Work Done	Hours Worked	Remarks by Intern
04.03.2024	Explored open-source tools and libraries for deepfake detection	2	Experimented with a few codebases to get hands-on experience
05.03.2024	Gathering training data for deepfake and real videos	4	Searched for publicly available datasets to compile initial corpus
06.03.2024	Continued data collection and preprocessing	3	Filtered and organized videos into appropriate folders
07.03.2024	Set up development environment, installed required libraries	3	Ensured all dependencies and packages are available
08.03.2024	Implemented basic CNN model for frame classification	4	Achieved initial working prototype but needs refinement
09.03.2024	Analyzed model performance, identified areas for improvement	3	Realized need for deeper architecture and more training data
10.03.2024	Researched transfer learning techniques for deepfake detection	2	Decided to leverage pre-trained weights for faster convergence

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WEEK 3

Date/Day	Work Done	Hours Worked	Remarks by Intern
11.03.2024	Experimented with fine tuning various pre trained CNN models	3	Remarkable outcomes from adjusting Exception weights
12.03.2024	Continued model optimization and hyperparameter tuning	2	Small improvements in loss and validation accuracy
13.03.2024	Investigated deepfake data enhancement techniques.	3	Applied techniques like flipping, rotation, noise to increase variety
14.03.2024	Incorporated temporal analysis module for detecting frame discrepancies	4	Simple LSTM showing potential to boost performance
15.03.2024	Researched biological signal analysis for deepfake detection	3	Study papers on detecting unnatural blinking, expression patterns
16.03.2024	Added optical flow calculation for motion tracking	4	Promising results in capturing subtle artifacts in facial movements
17.03.2024	Integrated biological signal analysis module into pipeline	2	Blinking, expression coherence features boosting overall accuracy

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WEEK 4

Date/Day	Work Done	Hours Worked	Remarks by Intern
18.03.2024	worked on combining several modules' results.	4	Experimented with simple averaging and learned weighted combination
19.03.2024	Evaluated performance on test sets, analyzed failure modes	2	Although hopeful, the model still has issues with videos that are compressed.
20.03.2024	Researched adversarial training for increasing generalization	3	Studied various attack methods that can be used for hardening
21.03.2024	Implemented FGSM and PGD attacks, updated training pipeline	3	Model exhibiting increased robustness after retraining with attacks
22.03.2024	Continued working on adversarial hardening approaches	3	investigated strategies for logit pairing and ensemble training.
23.03.2024	Parallelized training on GPU cluster for faster experimentation	3	Significantly speeding up iteration time
24.03.2024	Refined model architecture based on error analysis	3	Deeper, wider architecture showing gains on challenging examples

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WEEK 5

Date/Day	Work Done	Hours Worked	Remarks by Intern
25.03.2024	Added metadata analysis module for checking tampering artifacts	3	Integrating non-vision based signals into the detection pipeline
26.03.2024	Evaluated mitigation against attacks with dynamic loss landscapes	4	Encouraging ongoing adjustment without irreparable forgetfulness
27.03.2024	Worked on interpreting model decisions, generating visualizations	3	Aiming to improve transparency and explainability of detections
28.03.2024	Explored techniques for detecting GAN fingerprints and artifacts	3	A promising method for identifying deep fakes using codebook analysis
29.03.2024	Compared model using datasets from the most recent techniques for creating deepfakes	3	Performs poorly with future data, but works well with present test sets.
30.03.2024	investigated methods for data scarcity using small-scale learning.	2	Could enable adapting to new generators with limited examples
31.03.2024	Implemented meta-learning extension for few-shot detection adaptation	2	Initial attempts showing promise in rapid generalization

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WEEK 6

Date/Day	Work Done	Hours Worked	Remarks by Intern
01.04.2024	optimized the use of GPU memory and removed bottlenecks.	4	Allowing training on larger batch sizes and video lengths
02.04.2024	Worked on improving computational efficiency of the pipeline	1 1/2	investigated methods for model distillation, quantification, and reduction
03.04.2024	Evaluated final system on comprehensive test benchmark	2	reached outstanding outcomes across a number of measures.
04.04.2024	Documented methodology, findings and future research directions	3	
05.04.2024			
06.04.2024	Researched interpretability methods for explainable deepfake detection	2	
07.04.2024	Implemented saliency maps and gradient visualizations	2	

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WEEK 7

Date/Day	Work Done	Hours Worked	Remarks by Intern
08.04.2024	Investigated audio deepfake detection methods	1	
09.04.2024			
10.04.2024			
11.04.2024			
12.04.2024			
13.04.2024	Conducted load testing and performance benchmarking	2	
14.04.2024			

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WEEK 8

Date/Day	Work Done	Hours Worked	Remarks by Intern
15.04.2024			
16.04.2024			
17.04.2024			
18.04.2024			
19.04.2024	investigated the use of digital watermarks in authentication	3	Detection combined with strong watermarks for more reliable verification
20.04.2024			
21.04.2024			

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WEEK 9

Date/Day	Work Done	Hours Worked	Remarks by Intern
22.04.2024			
23.04.2024			
24.04.2024			
25.04.2024			
26.04.2024			
27.04.2024			
28.04.2024			

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WEEK 10

Date/Day	Work Done	Hours Worked	Remarks by Intern
29.04.2024	Maintaining documentation and creating materials for distribution	3	Positive outcomes in modifying deepfake distributions
30.04.2024	Maintaining documentation and creating materials for distribution	2	assembling scientific results and significant advancements

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