

Deepfake Detector

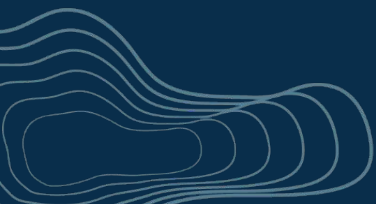
Team Faux Fighters

Cho, Anna

Denq, Christopher

Nelson, Reid (Jackson)

Roadmap



Roadmap

Problem Statement



Roadmap

**Problem
Statement**



Methodology

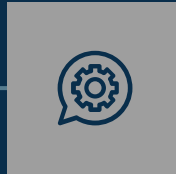


Roadmap

**Problem
Statement**



Methodology



Analysis



Roadmap

**Problem
Statement**



Methodology



Analysis



Conclusion



A decorative background on the right side of the slide featuring a topographic map with concentric contour lines in a light gray color.

01

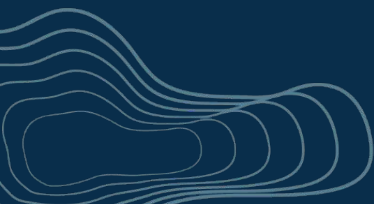
Problem Statement

“AI is spook.”

—Elon Musk, probably

PROBLEM

Generative AI makes it easy to deepfake.



PROBLEM

Generative AI makes it easy to deepfake.

Deepfake



Real



PROBLEM

Generative AI makes it easy to deepfake.

SOLUTION

We have “out-of-box” deepfake detector.

A decorative topographic map pattern with concentric, wavy lines in a light gray color, located on the left side of the slide.

02

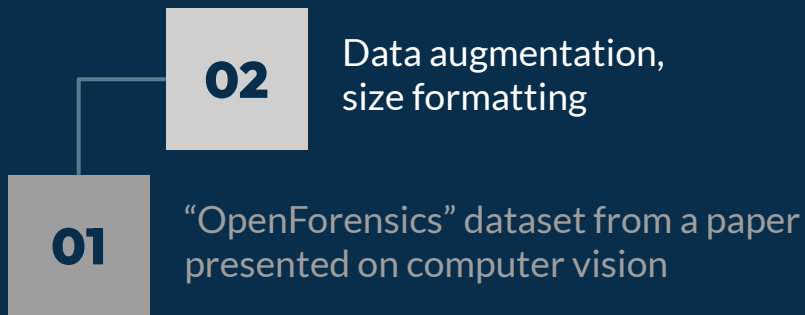
METHODOLOGY & DEMO



01

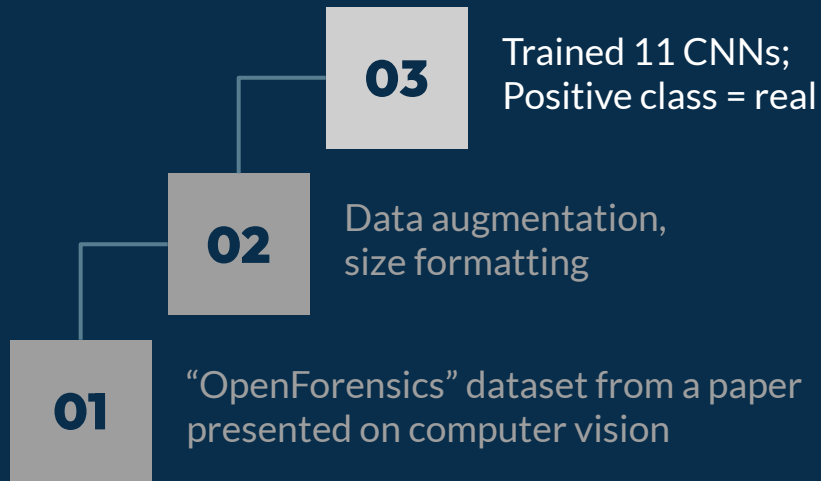
“OpenForensics” dataset from a paper
presented on computer vision

SOURCE



CLEAN

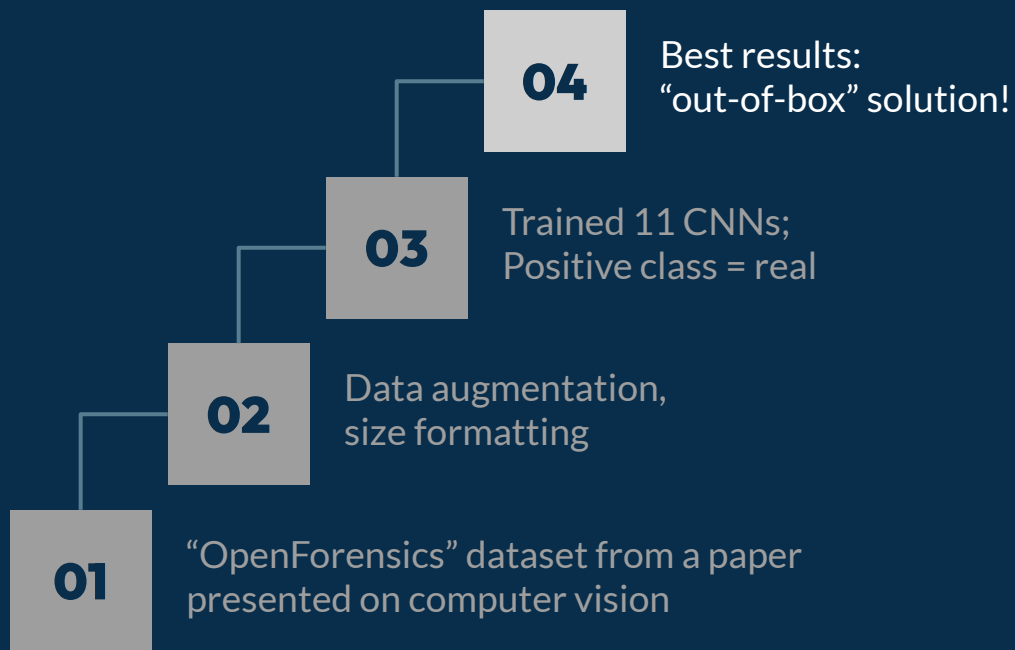
SOURCE



MODEL

CLEAN

SOURCE



RESULT

MODEL

CLEAN

SOURCE

A decorative background on the right side of the slide featuring a topographic map with concentric contour lines in a light gray color.

03

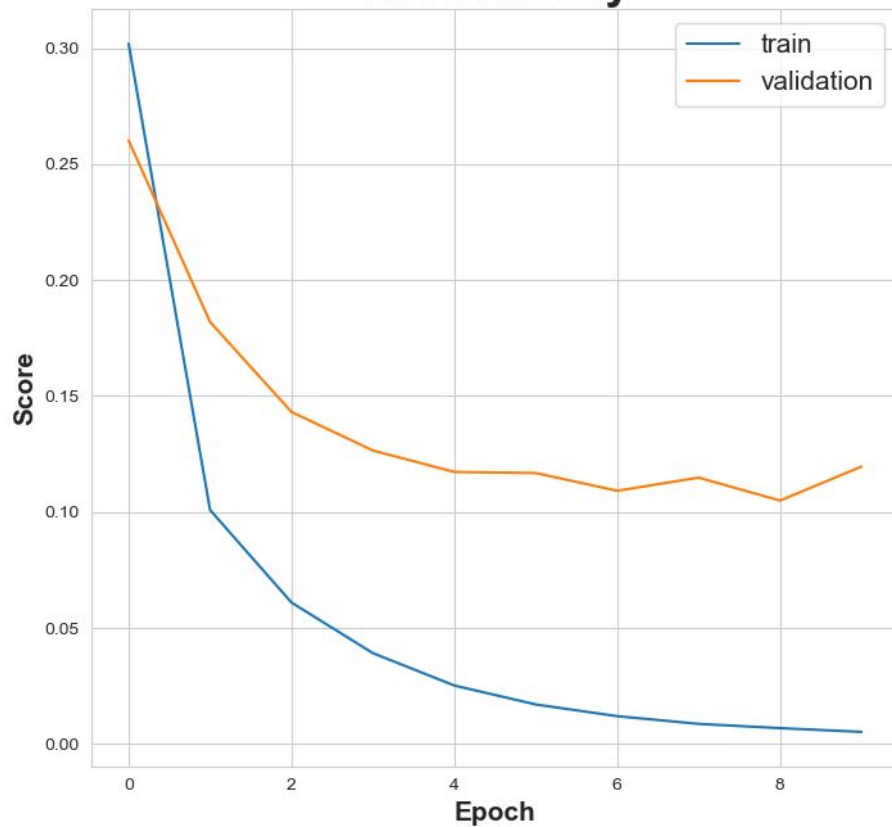
ANALYSIS



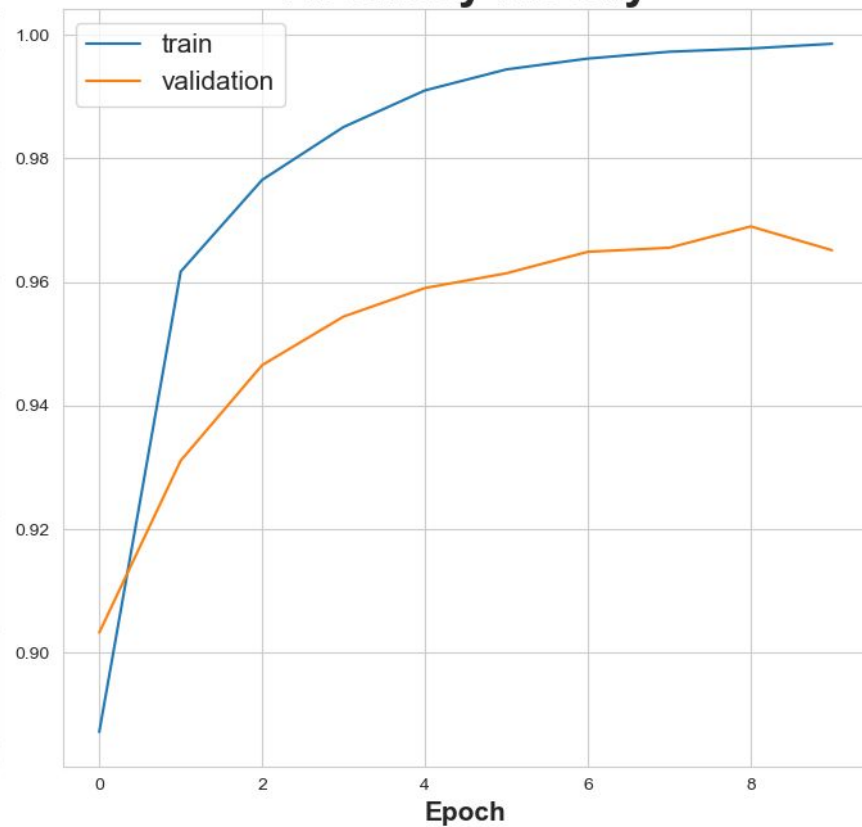
Best Model

Eff.NetV2_B0

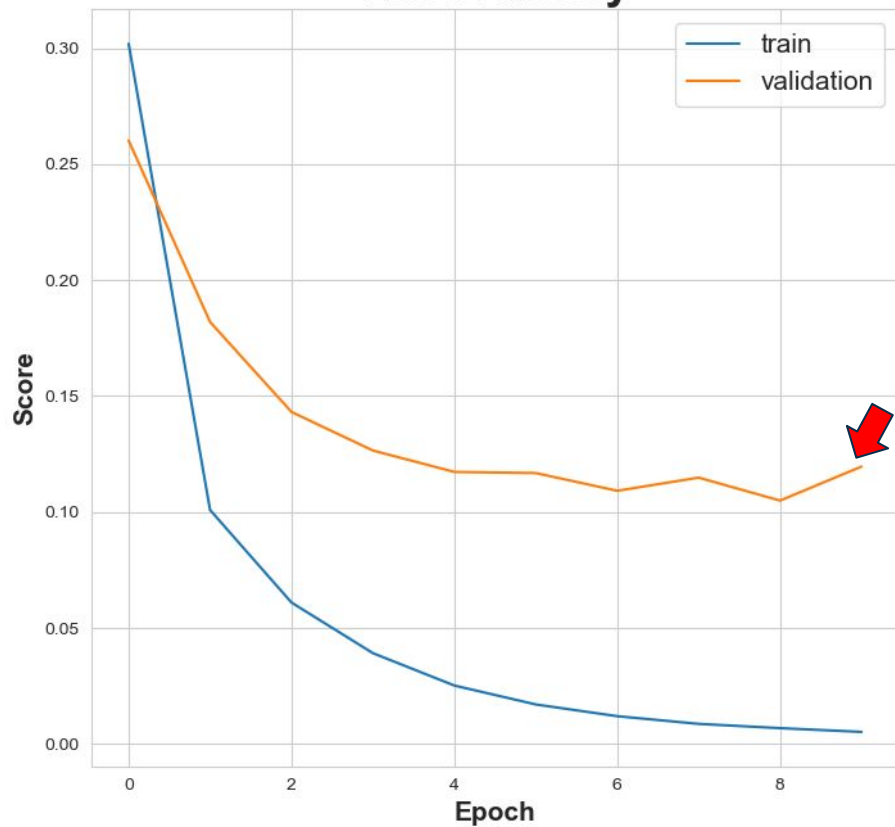
Loss History



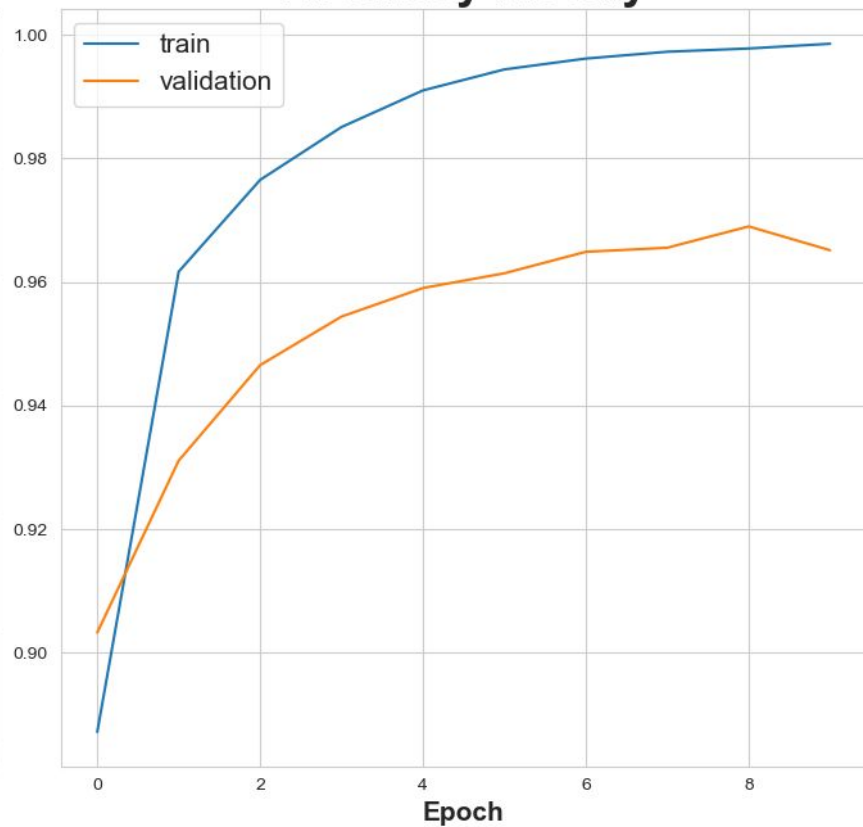
Accuracy History



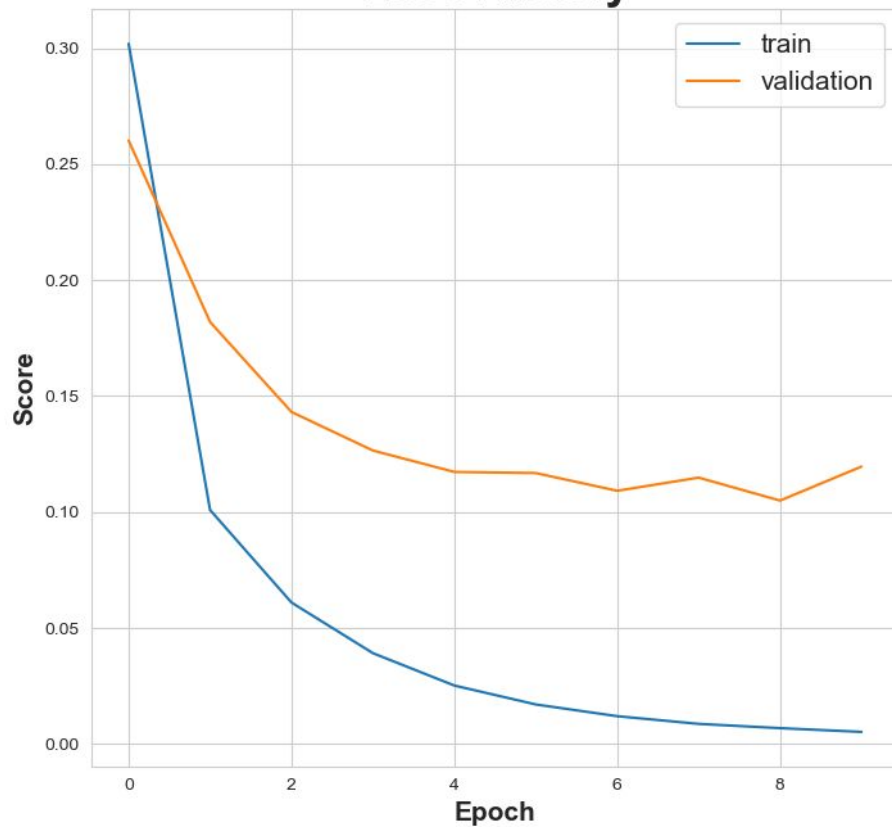
Loss History



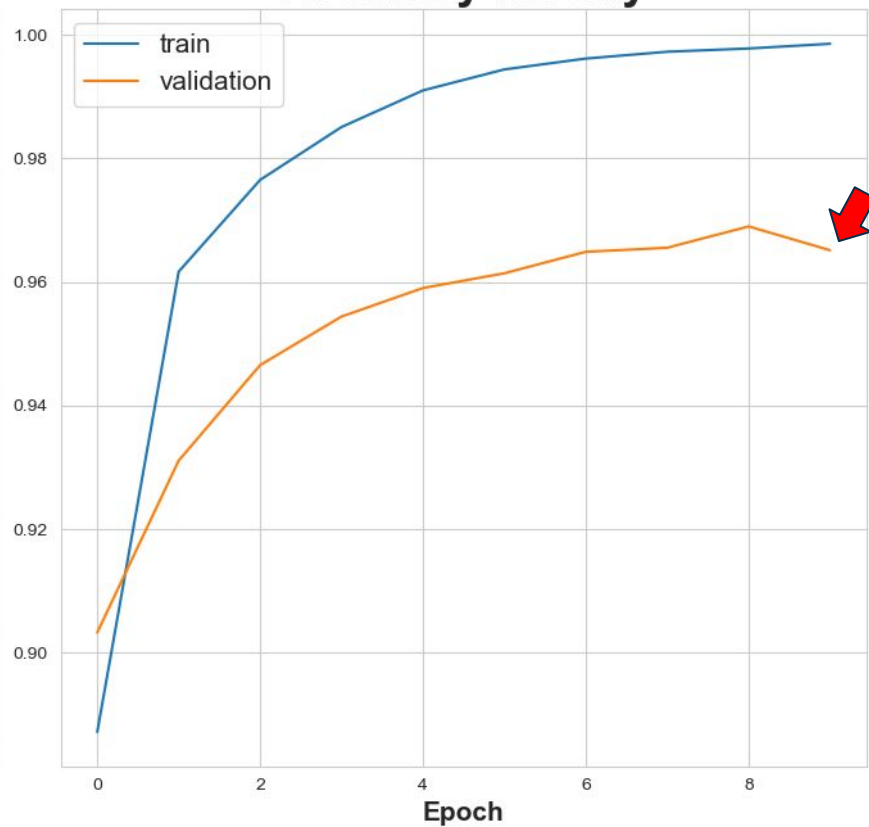
Accuracy History



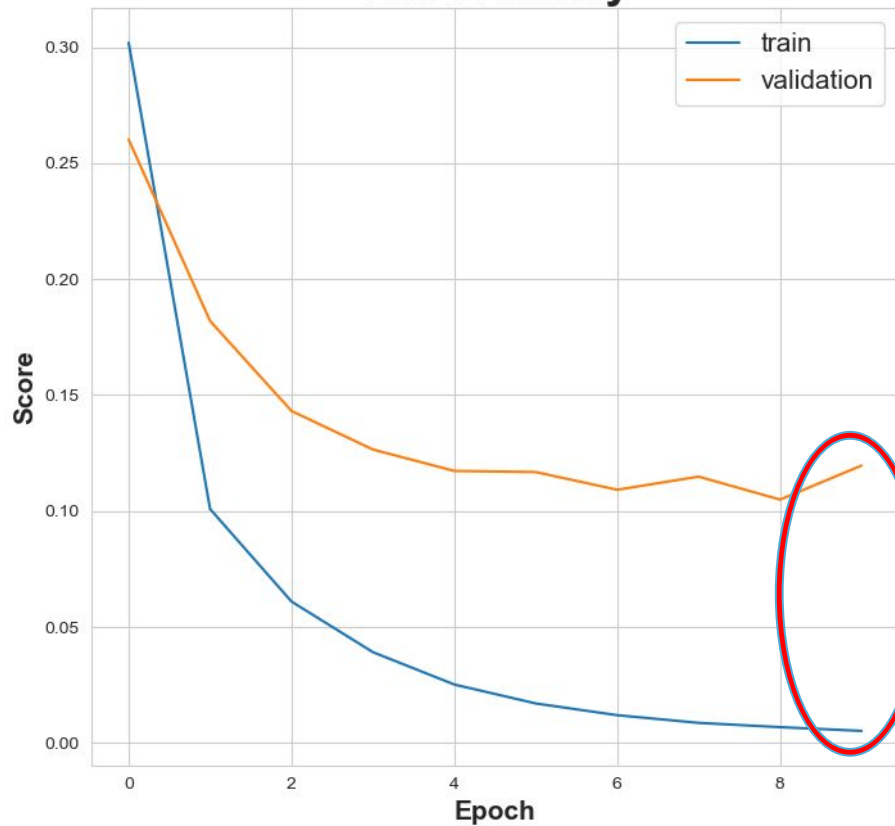
Loss History



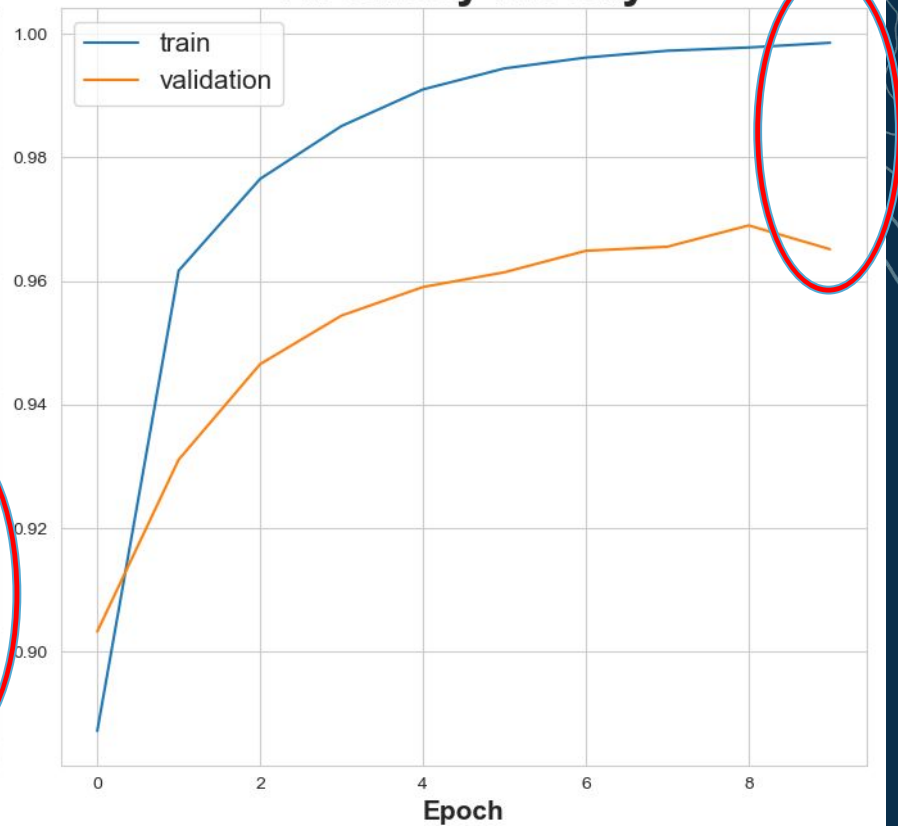
Accuracy History



Loss History

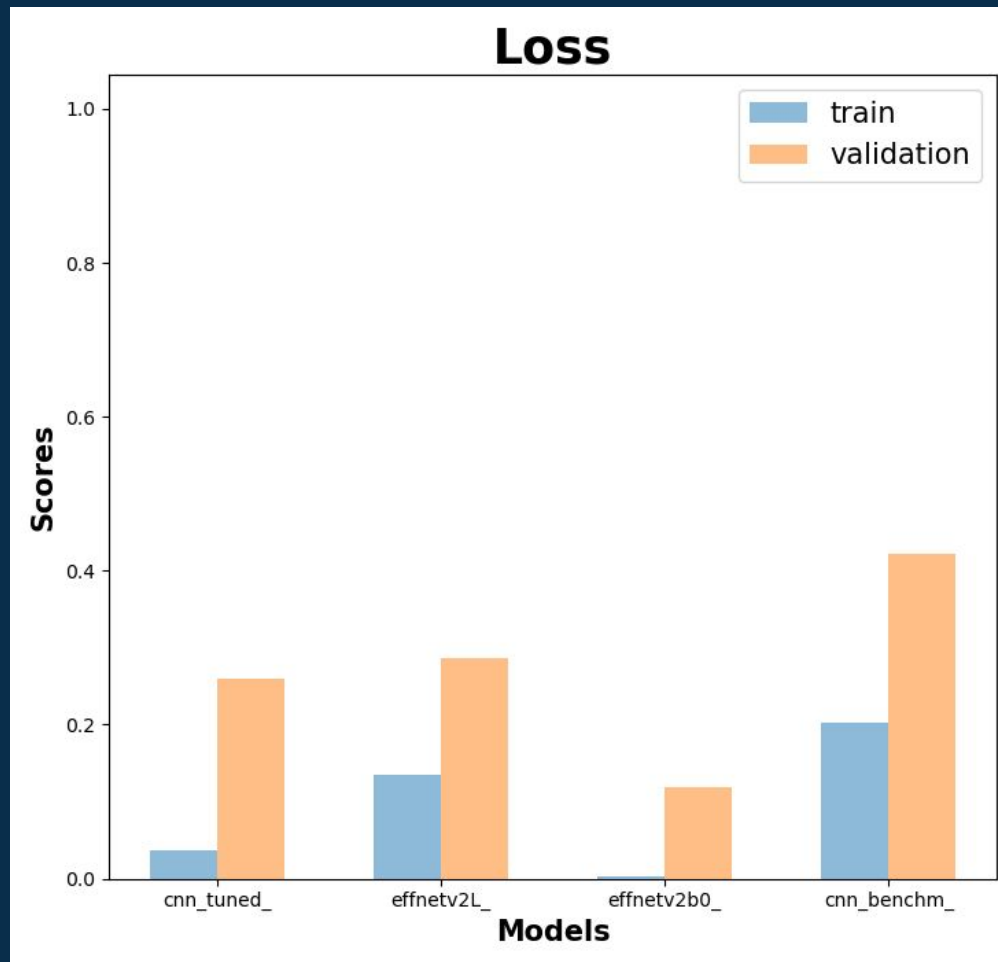


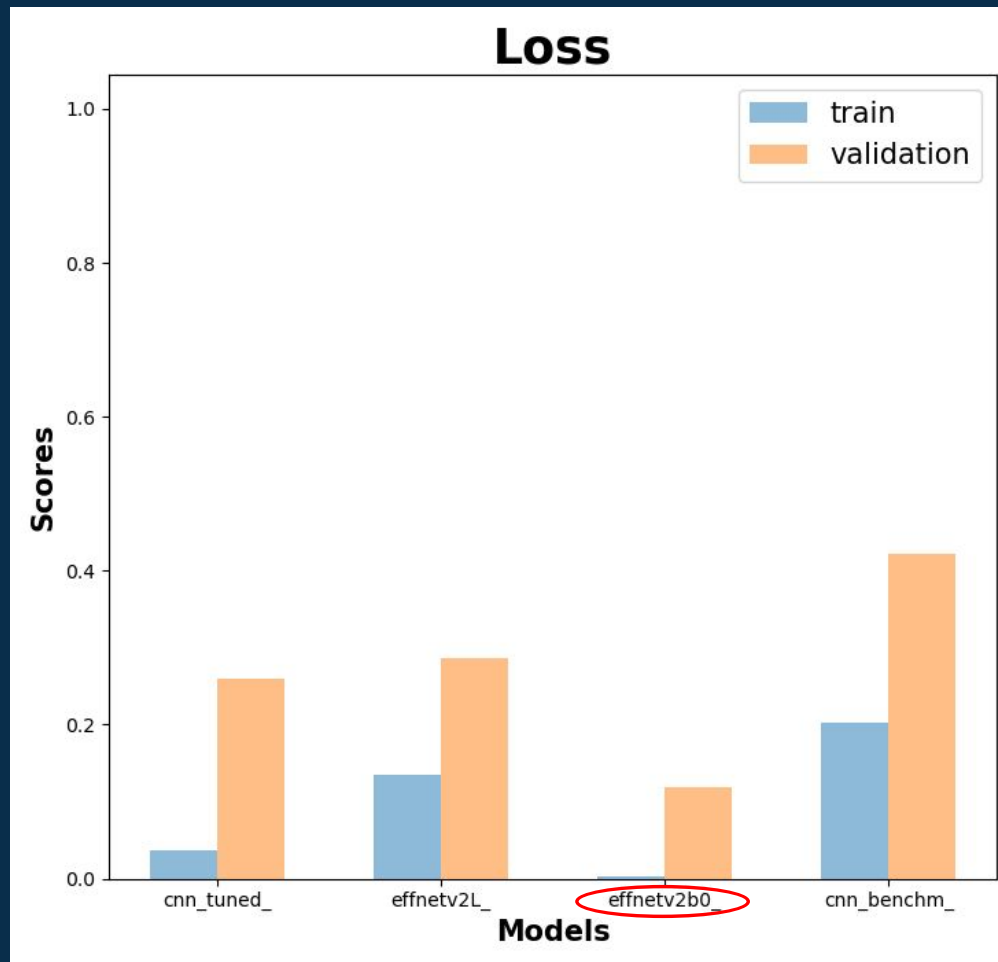
Accuracy History

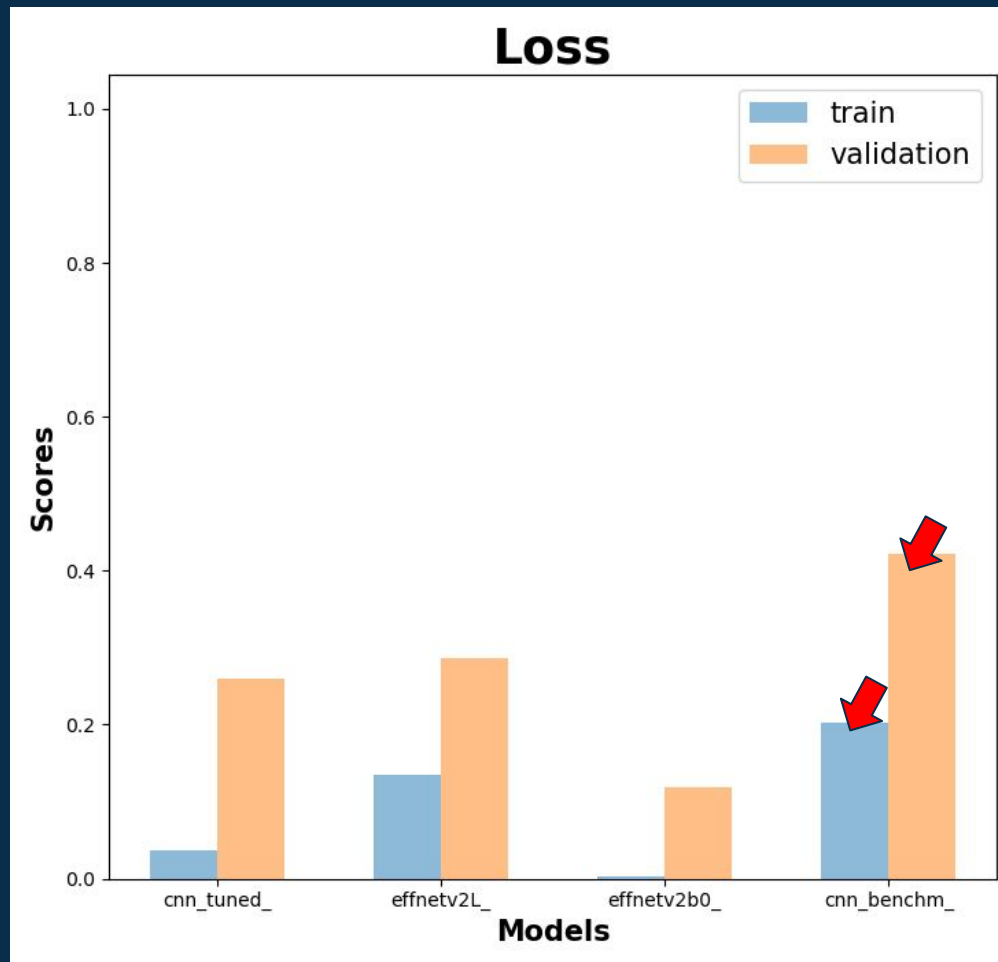




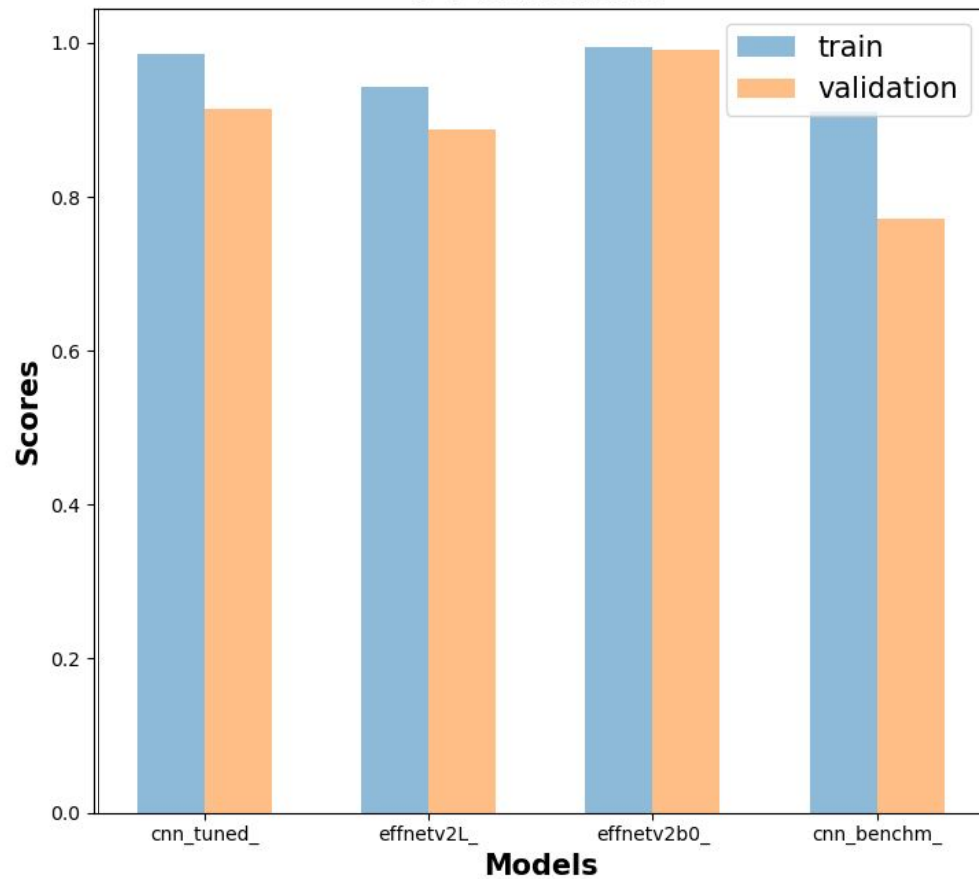
Selected Model Comparisons

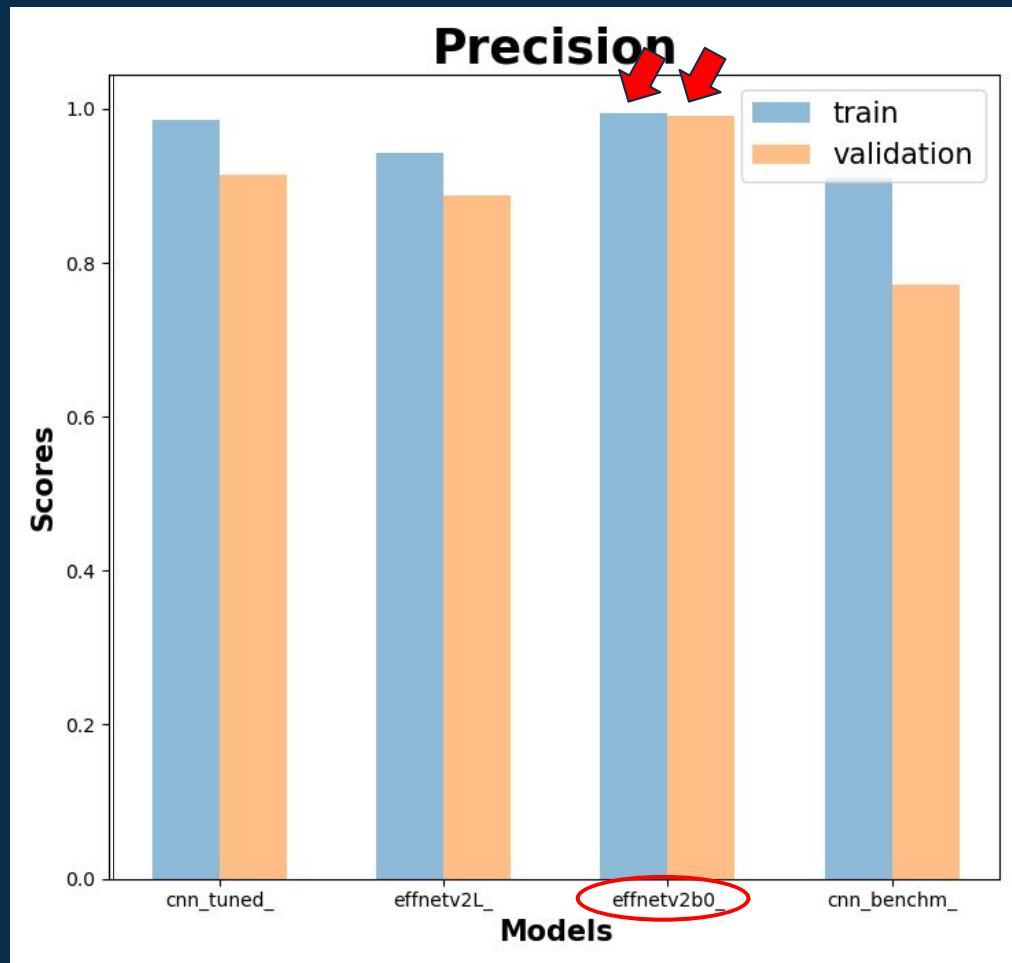






Precision







Best



Benchmark



Experimental



Best



Benchmark

Sequential CNN (Base)
Prec: 0.849



Experimental



Best



Benchmark

Sequential CNN (Base)
Prec: 0.849



Experimental

EfficientNetv2_L (TL)
Prec: 0.822



Best

EfficientNetv2_B0
Prec: 0.992



Benchmark

Sequential CNN (Base)
Prec: 0.849



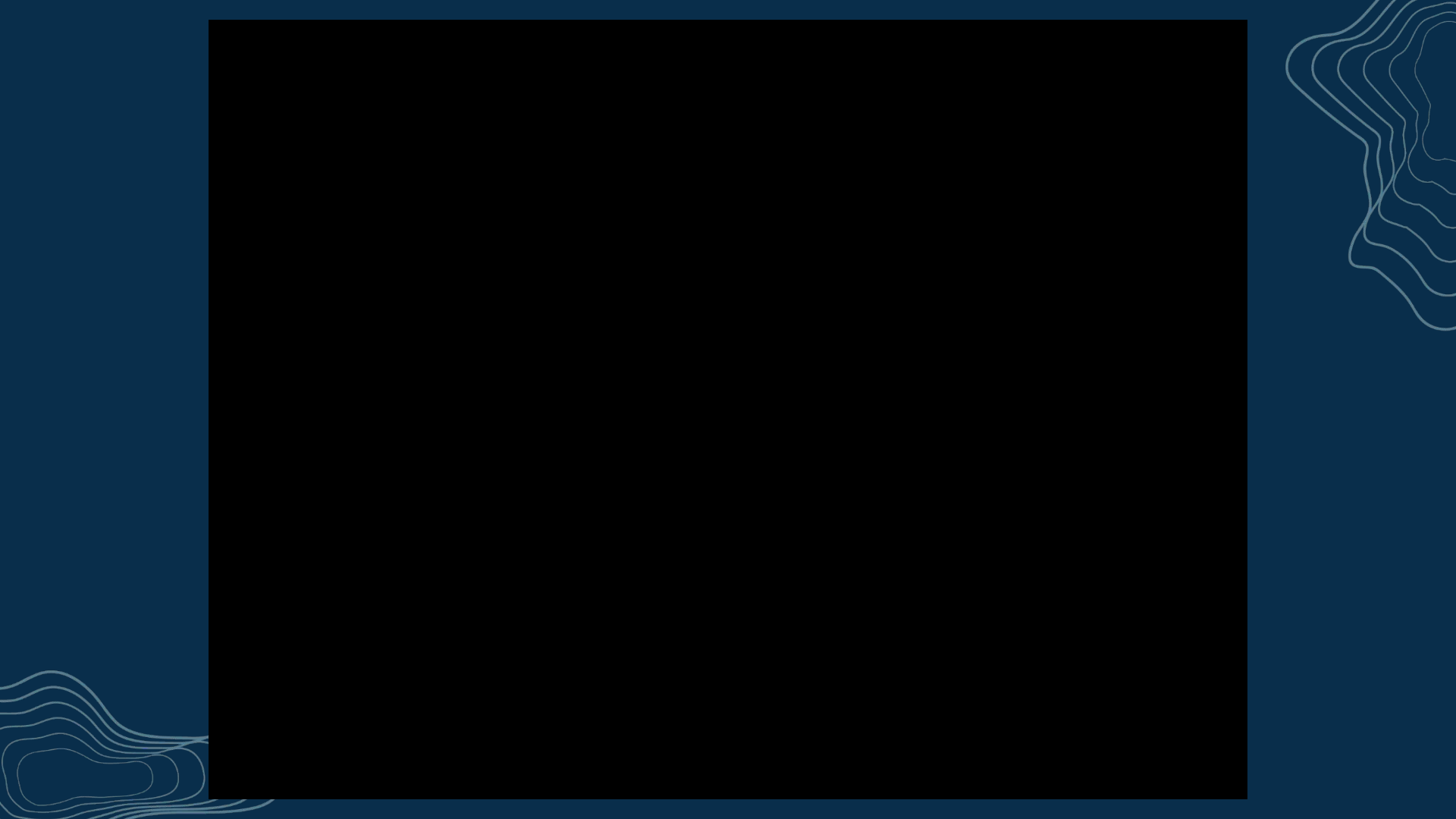
Experimental

EfficientNetv2_L (TL)
Prec: 0.822

A decorative topographic map pattern with concentric, wavy lines in a light gray color, located on the left side of the slide.

04

CONCLUSION



TAKEAWAYS

BEST MODEL

EfficientNetv2_B0

Precision: 0.992

TAKEAWAYS

BEST MODEL

EfficientNetv2_B0

Precision: 0.992

UNCERTAINTIES

- Generalize to other types of deepfake image generators?
- Susceptible to image manipulations (eg. blur)?

TAKEAWAYS

BEST MODEL

EfficientNetv2_B0

Precision: 0.992

UNCERTAINTIES

- Generalize to other types of deepfake image generators?
- Susceptible to image manipulations (eg. blur)?

FUTURE

- Retrain larger EfficientNetv2 Model (eg. more compute resources)
- Address overfitting: (eg. data augmentation)

The background is a solid dark blue. In the top right and bottom right corners, there are intricate, white, wavy line patterns that resemble topographical map contour lines or stylized smoke. These lines are thin and flow in a generally downward and rightward direction.

THANK YOU!

Questions?