(1) real images of benign and malignant

Poland

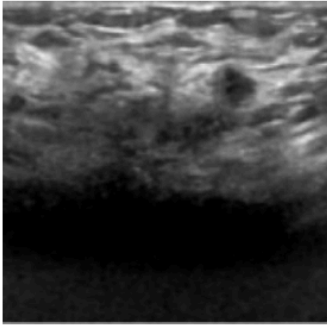| Label: Malignant	Label: Malignant	Label: Benign	Label: Benign	Label: Malignant

Egypt

Label: Benign	Label: Malignant	Label: Benign	Label: Benign	Label: Benign
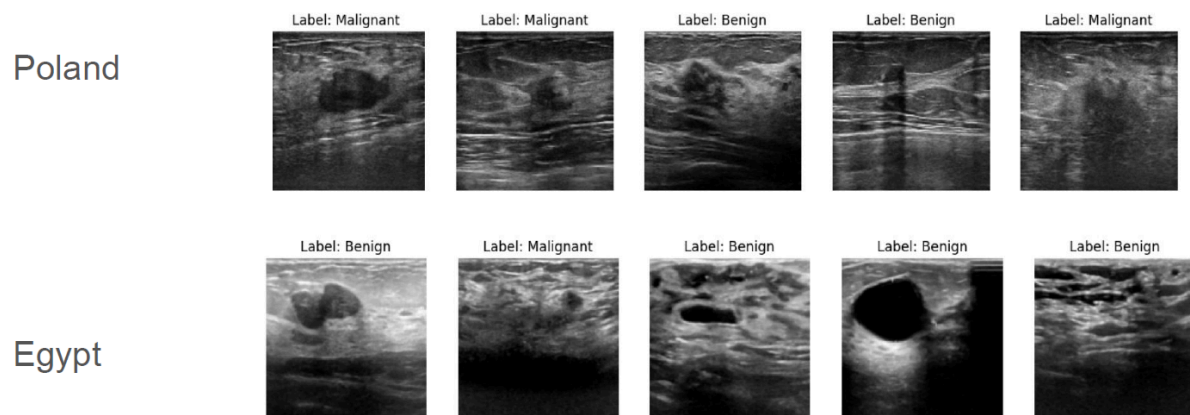
(2) WGAN improvements
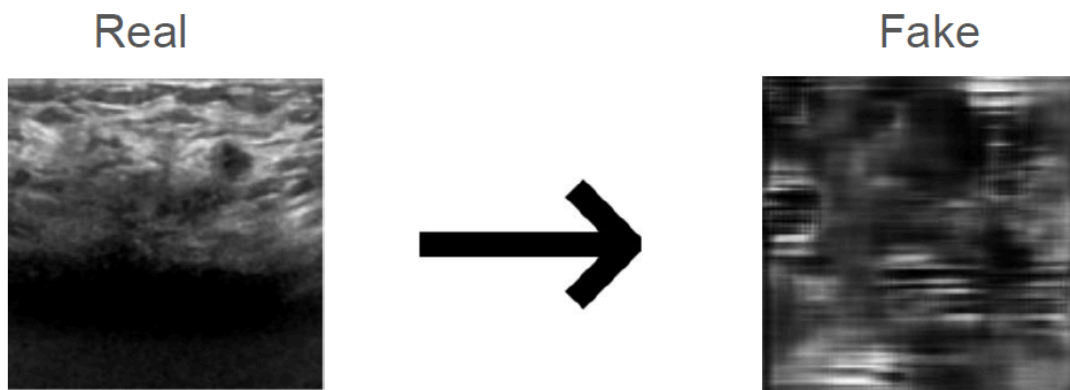
Real → Fake

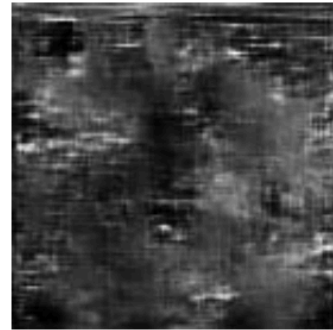## (3) WGAN improvements

Real   Fake
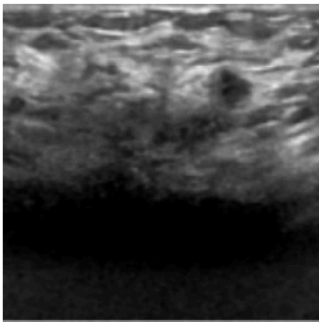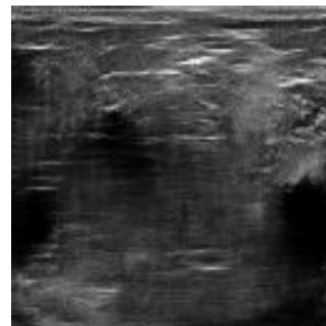

(4) WGAN improvements
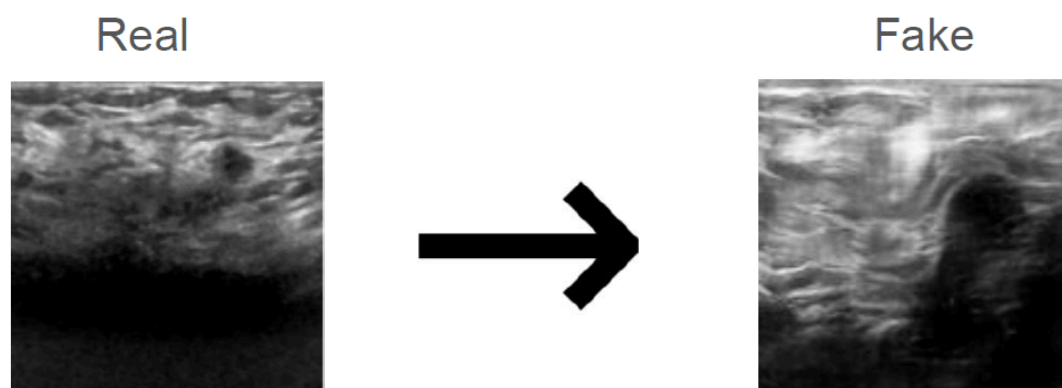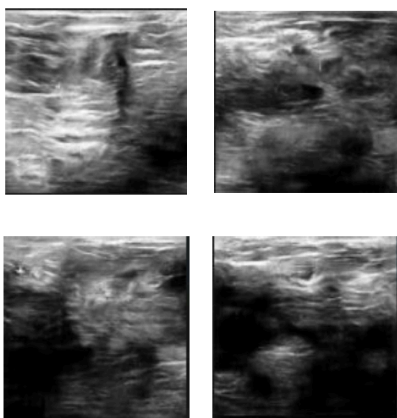

Real   Fake

(5) WGAN images (satisfactory)

Real   Fake
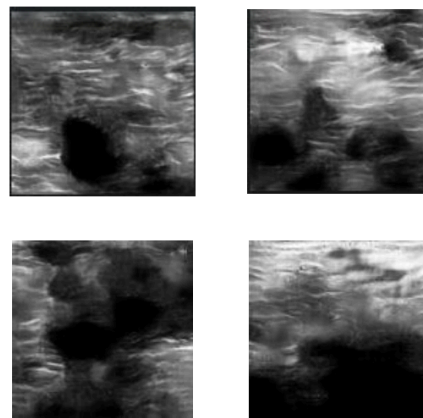
(6) WGAN images
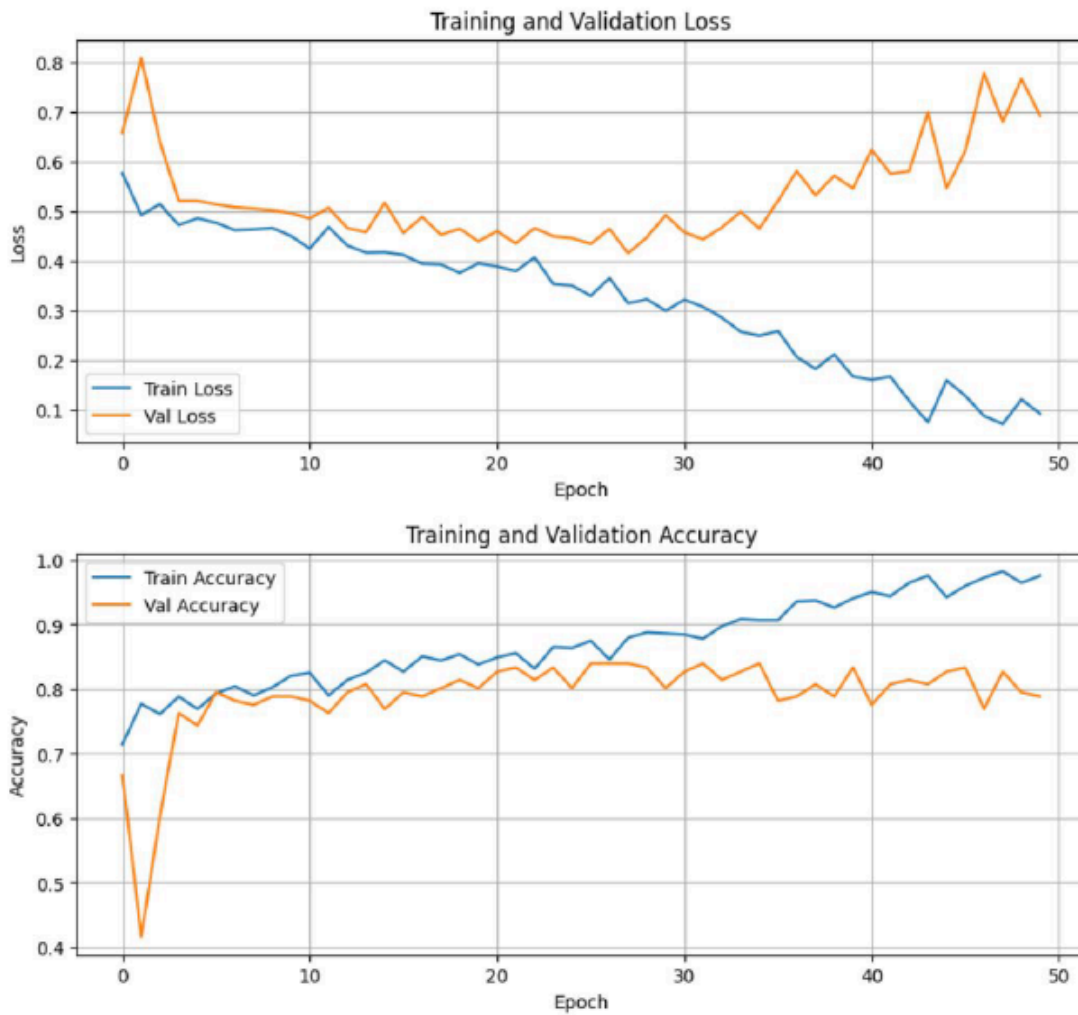

Benign: Malignant:

(7) Model training and loss, overfitting because of a small dataset, even with dropout and a regularizer

Training and Validation Loss

Training and Validation Accuracy

(8) F1 score, precision, recall. Recall on the malignant is highly problematic in real world applications

	precision	recall	f1-score
Malignant (0)	0.7027	0.5417	0.6118
Benign (1)	0.8151	0.8981	0.8546