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وزارة الاتصالات
وتكنولوجيا المعلومات

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وتكنولوجيا المعلومات

Our Team

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Brain MRI Scan Tumor

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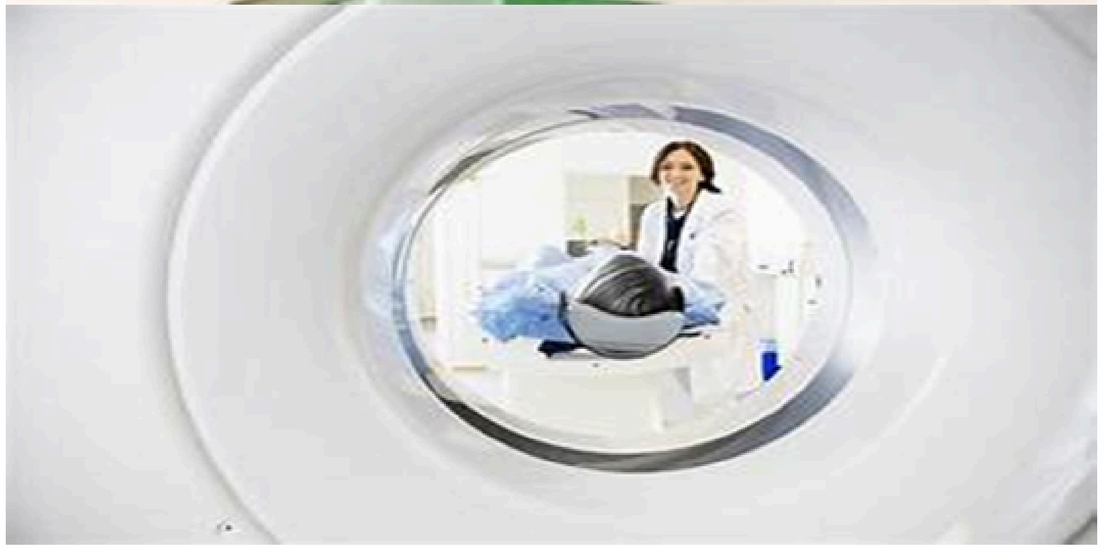
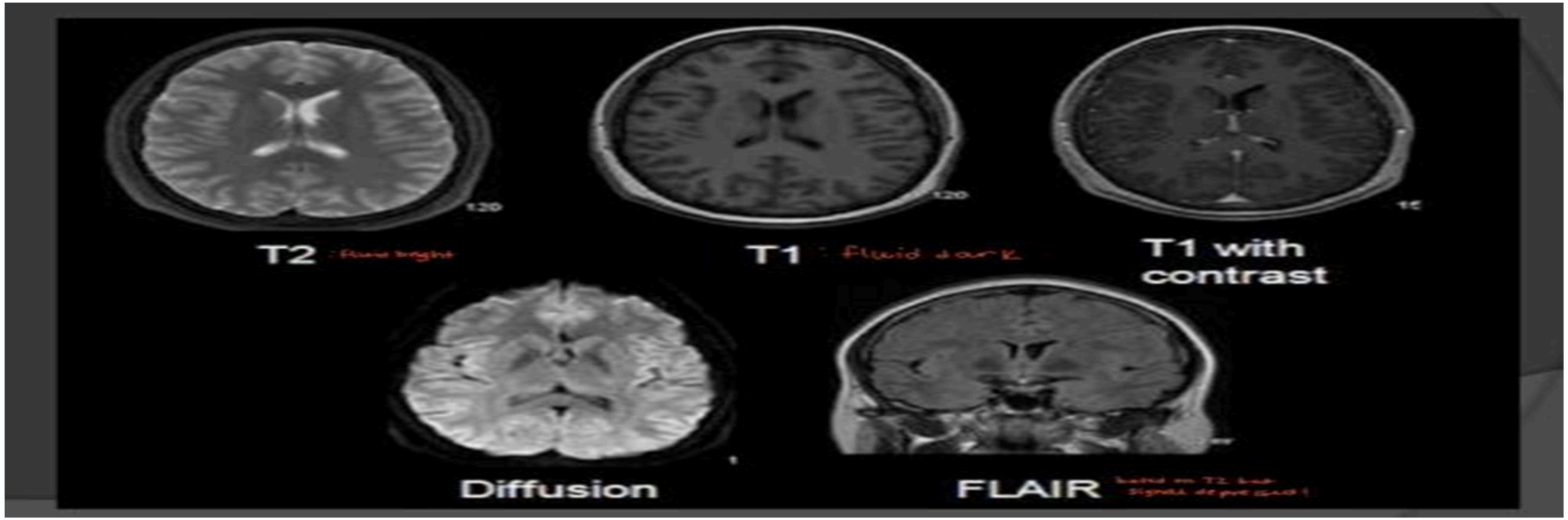
The Patient's Experience Inside the MRI Machine

- Claustrophobia.
- Noise.
- Duration.
- Positioning.
- Metal Implants or Devices..
- Avoid Gadolinium Side effects.

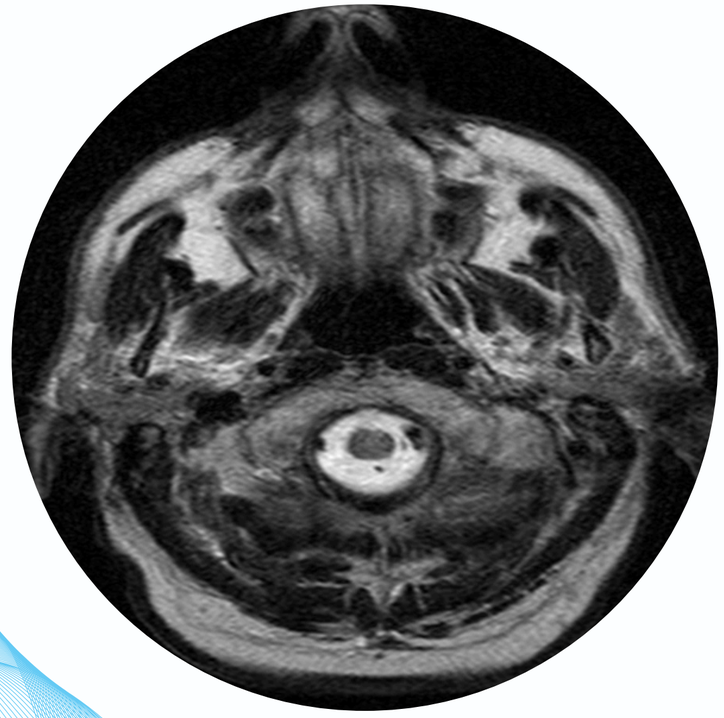
  (Rash,Metallic taste in the mouth).
- Patient Cooperation.



TYPES OF MRI ON BRAIN

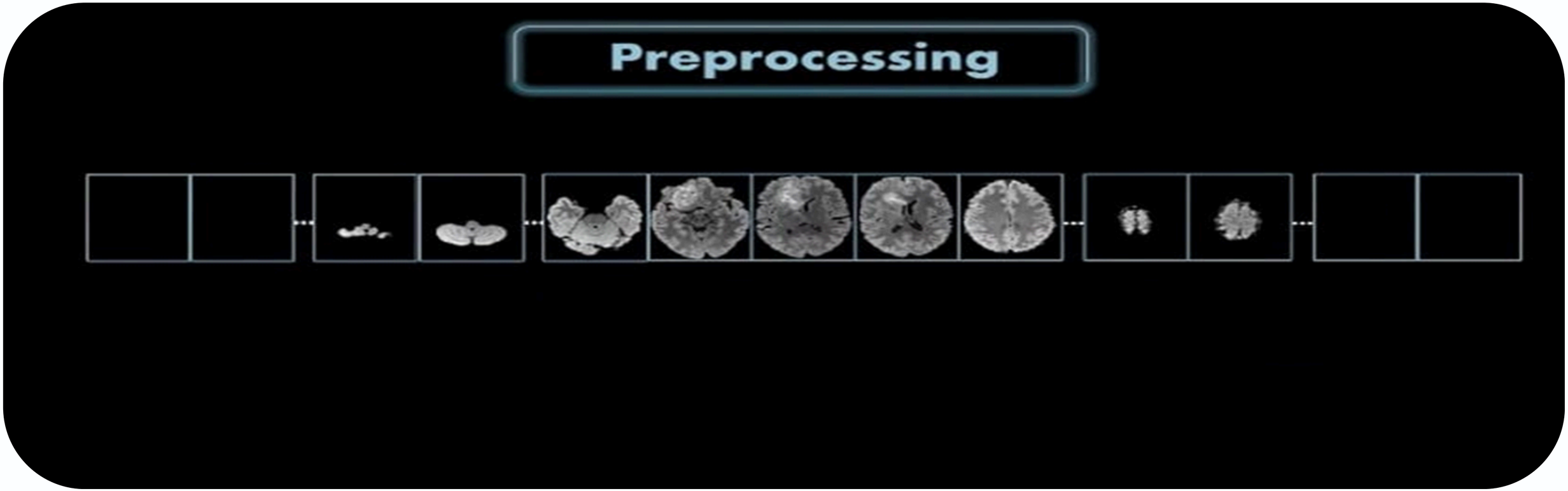


HOW MRI BRAIN WORKS?

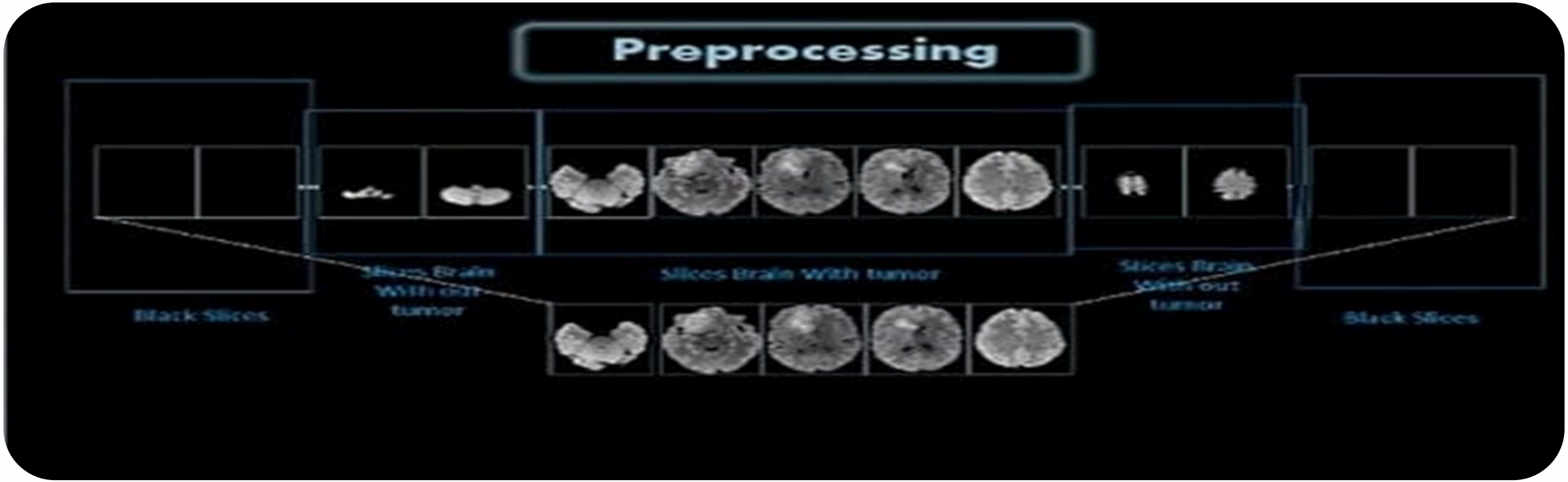


MRI (Magnetic Resonance Imaging) of the brain uses powerful magnets and radio waves to create detailed images, highlighting variations in tissue density,helping to detect small tumors by their distinct tissue characteristics. (150 v).

Data Preprocessing

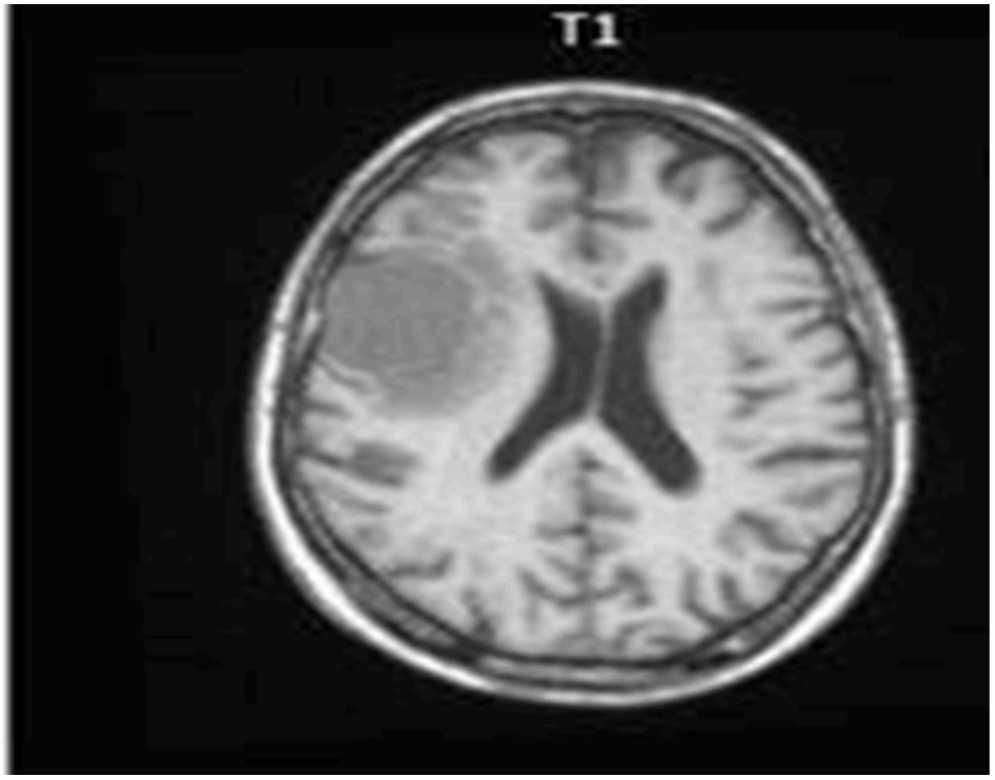


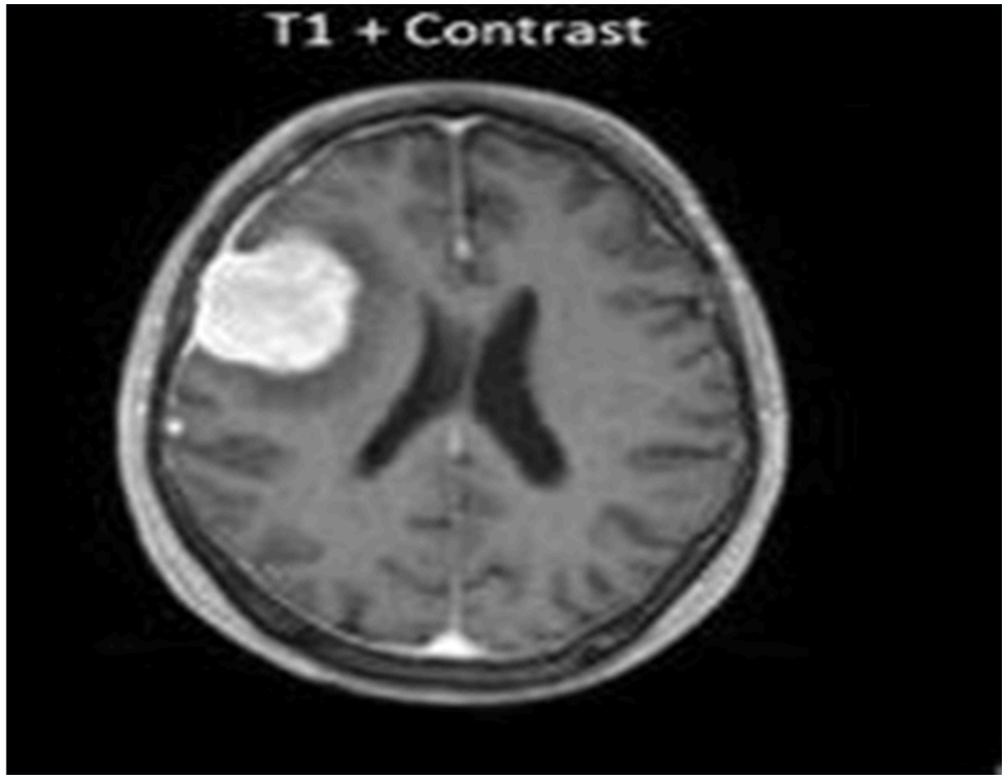
Data Preprocessing



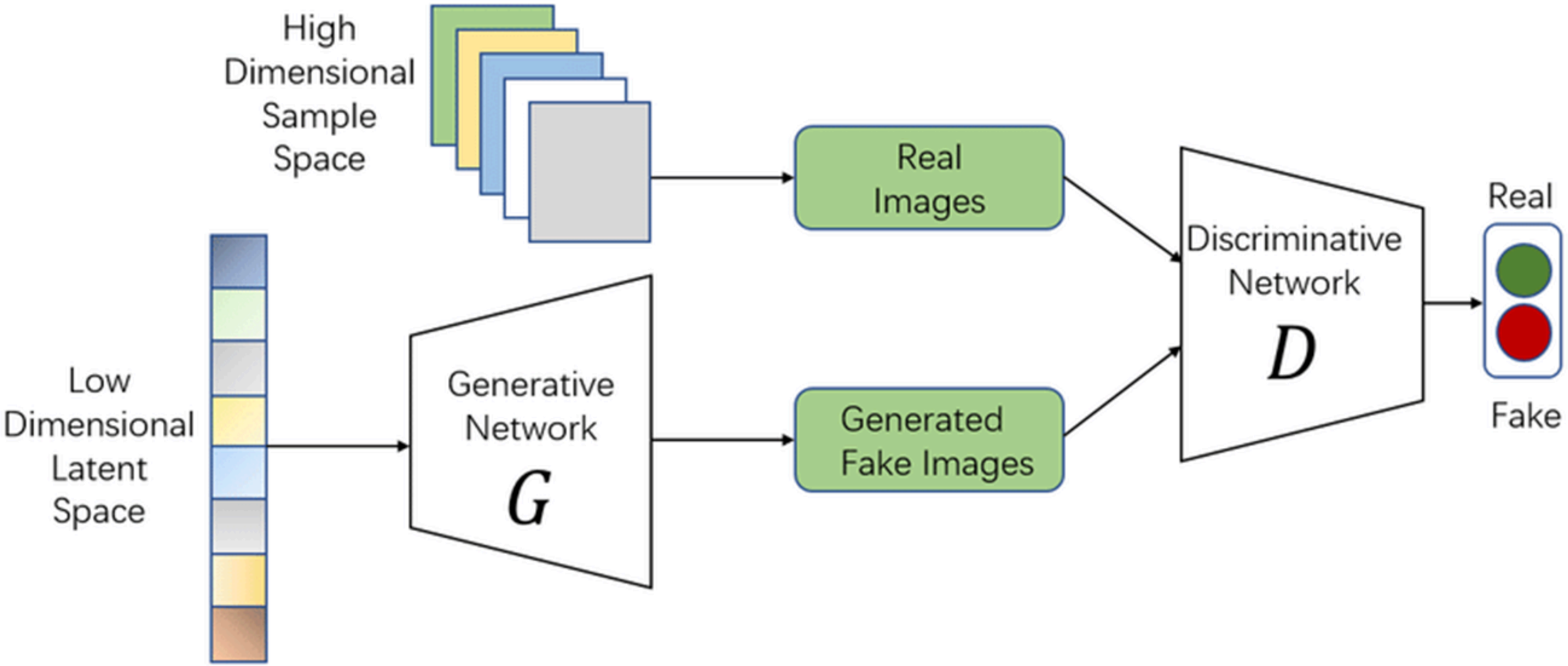
What Is The Difference Between t1 and t1 Contrast?

We Will Notice The Tumor In t1 Contrast Is Bright And Clearly



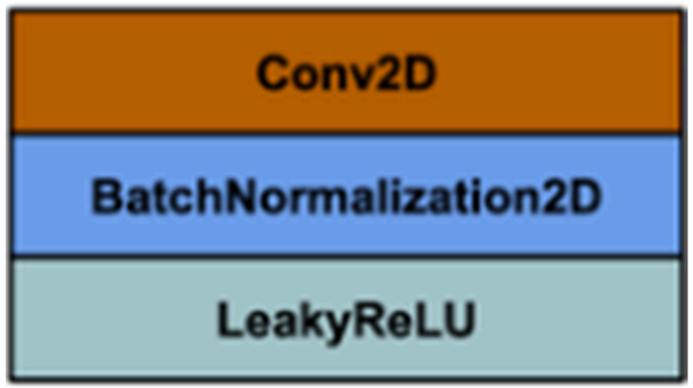


Generative Adversarial Networks (GANs)

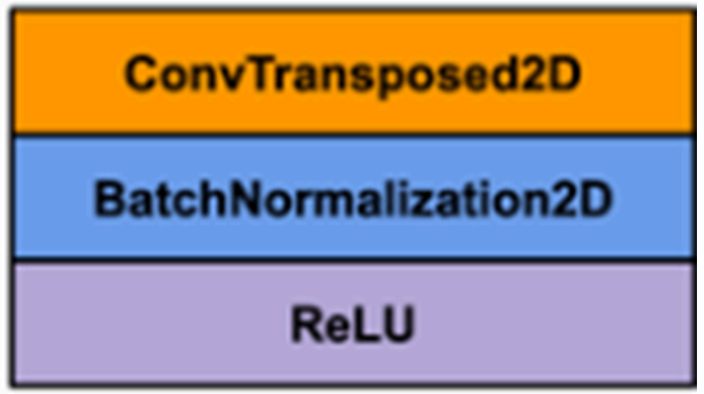


GANs blocks

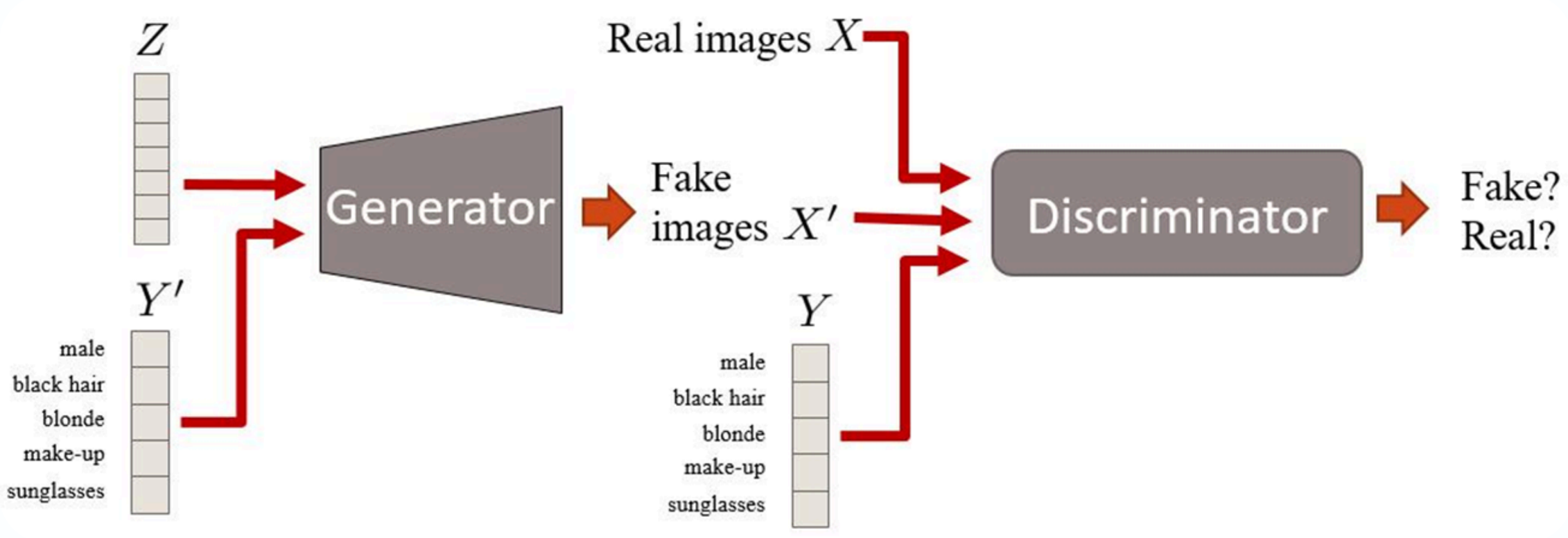
Encoder



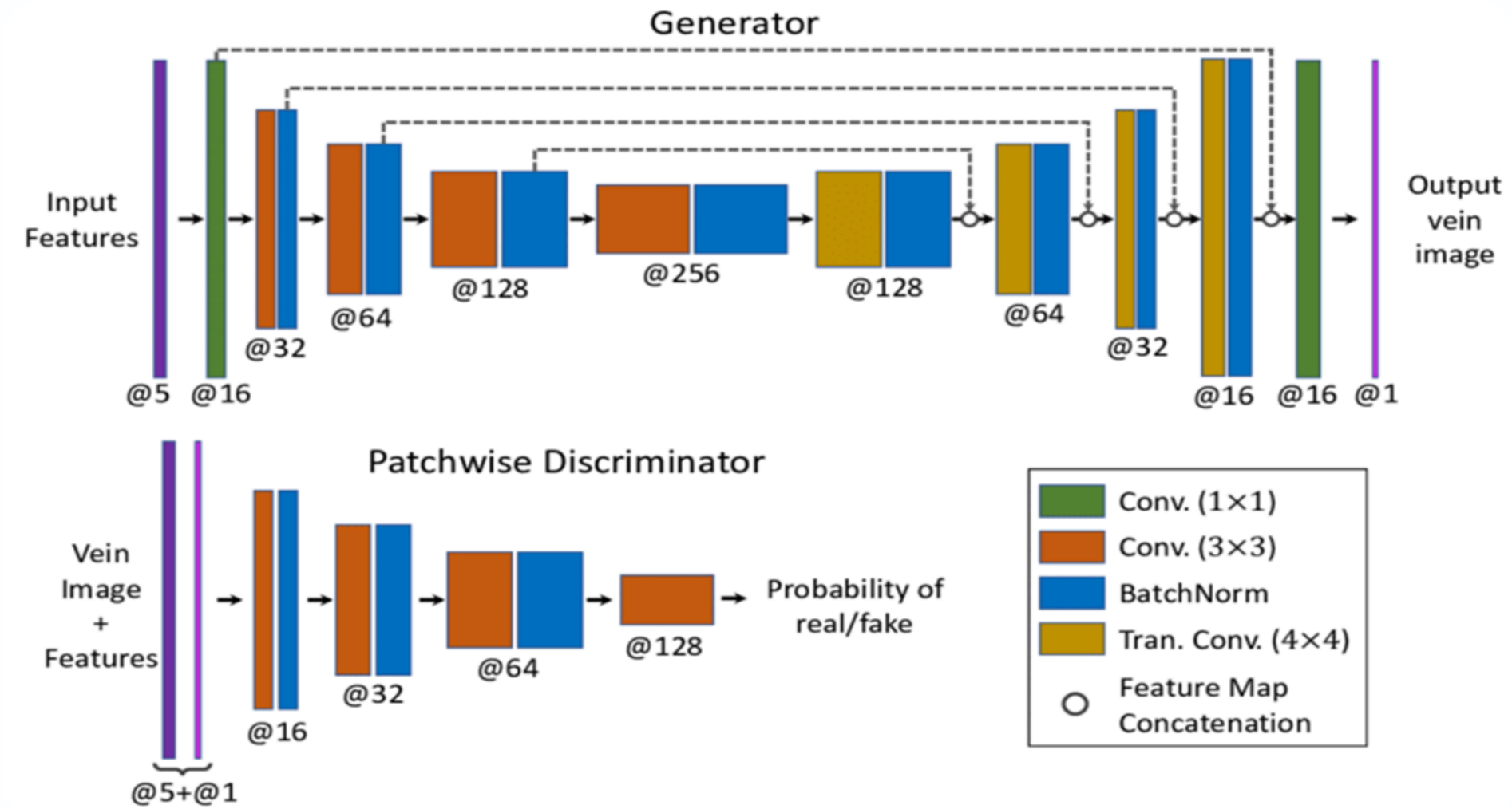
Decoder



Conditional GANs

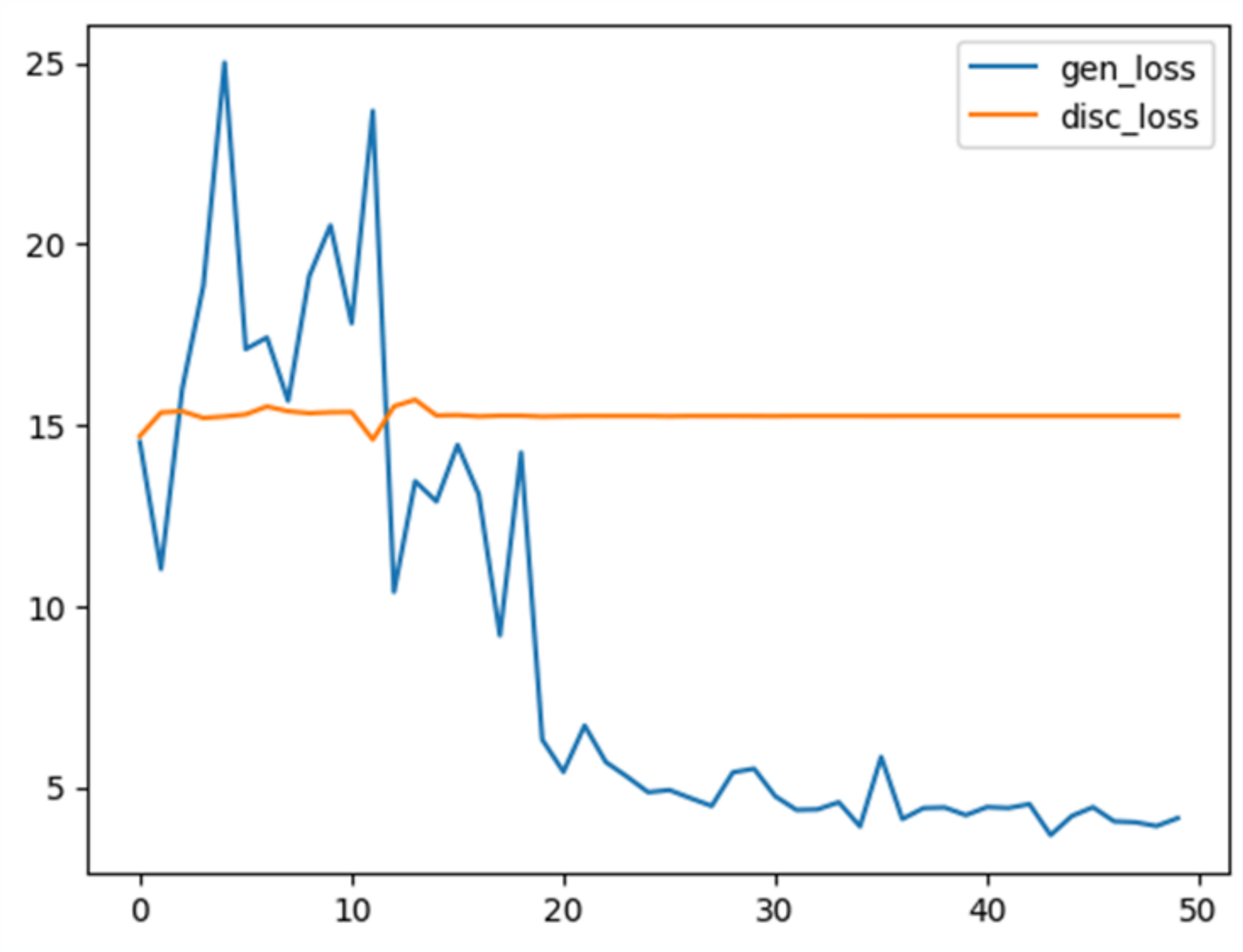


Architecture

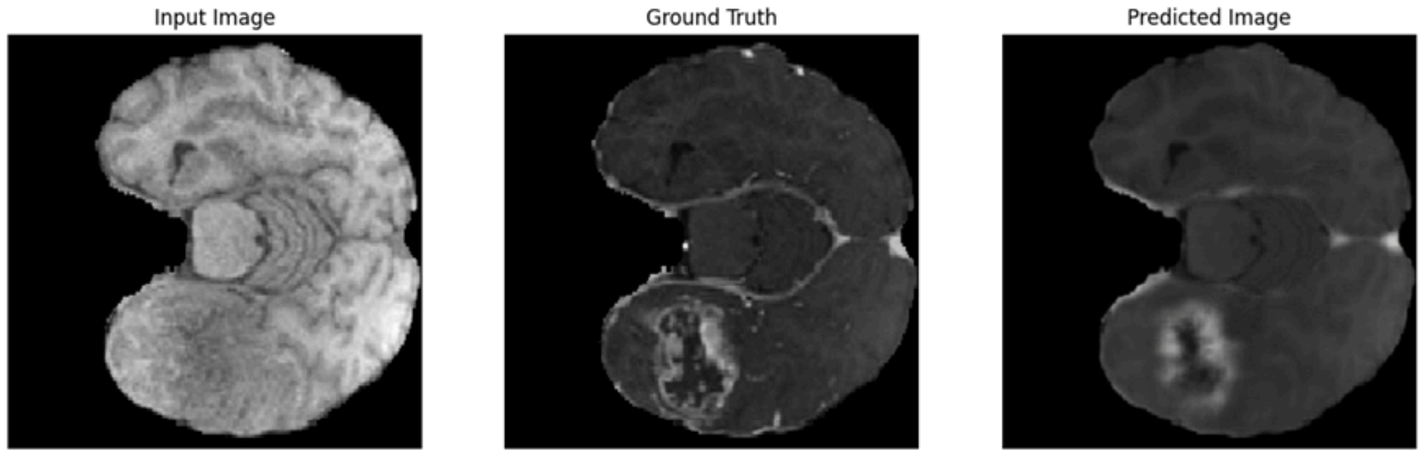


-The generator loss is decreasing.

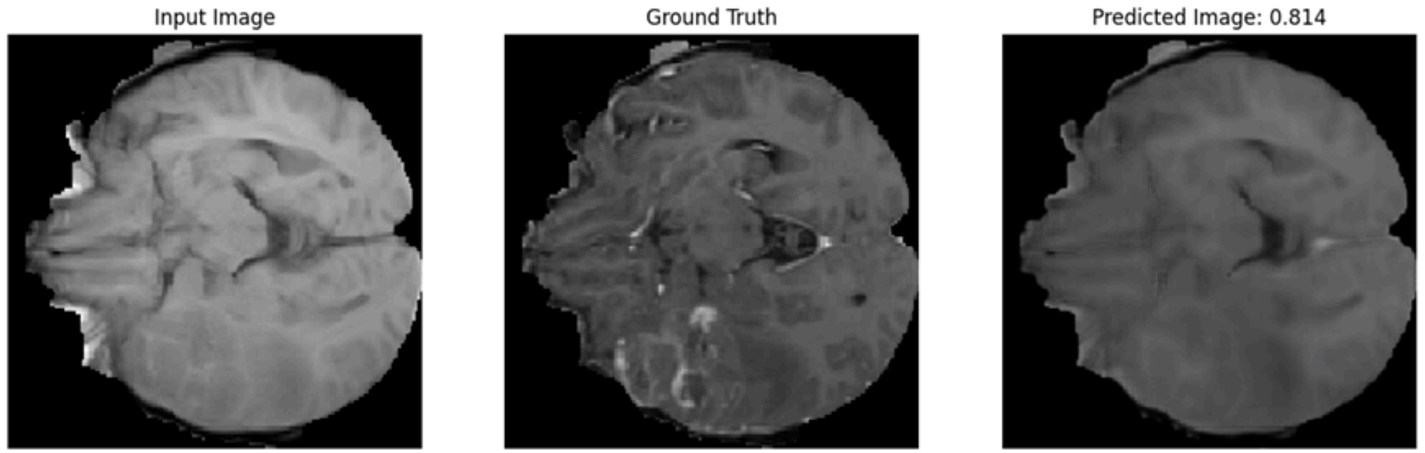
But, we seek equilibrium between the two models.



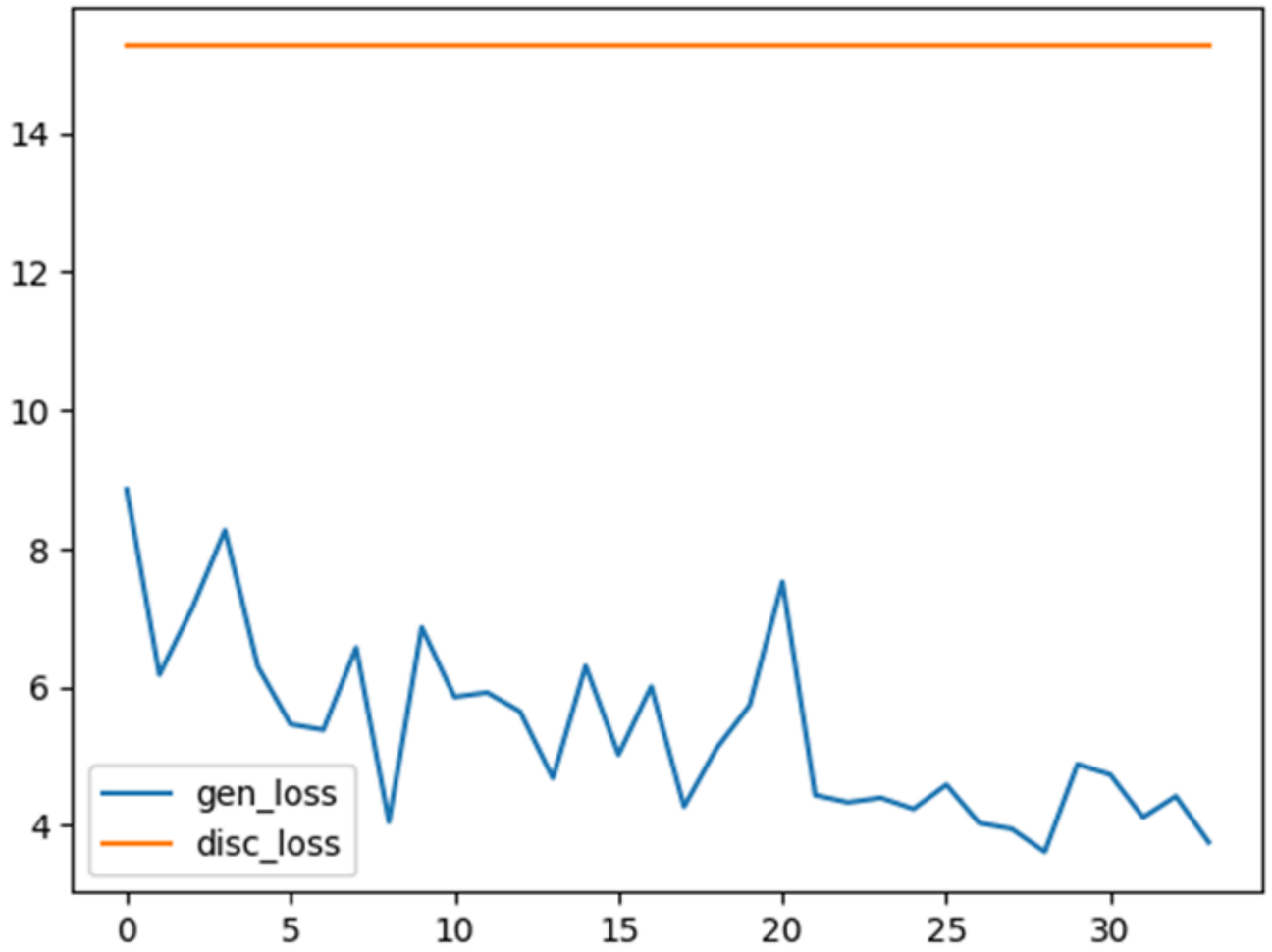
SSIM: 0.94



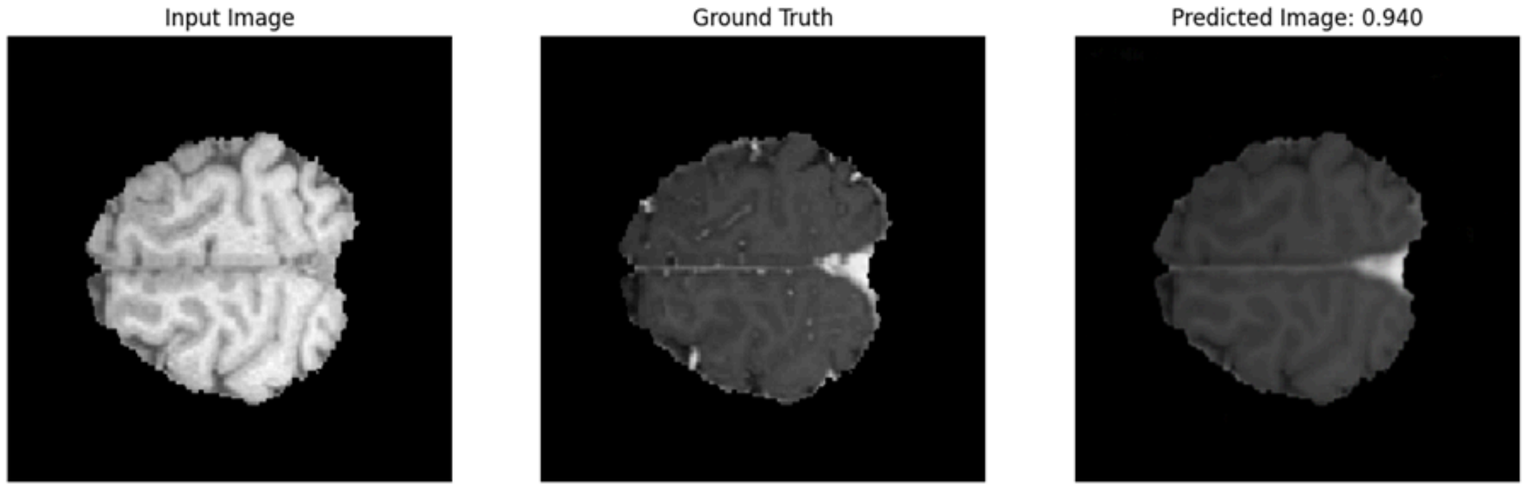
SSIM: 0.81



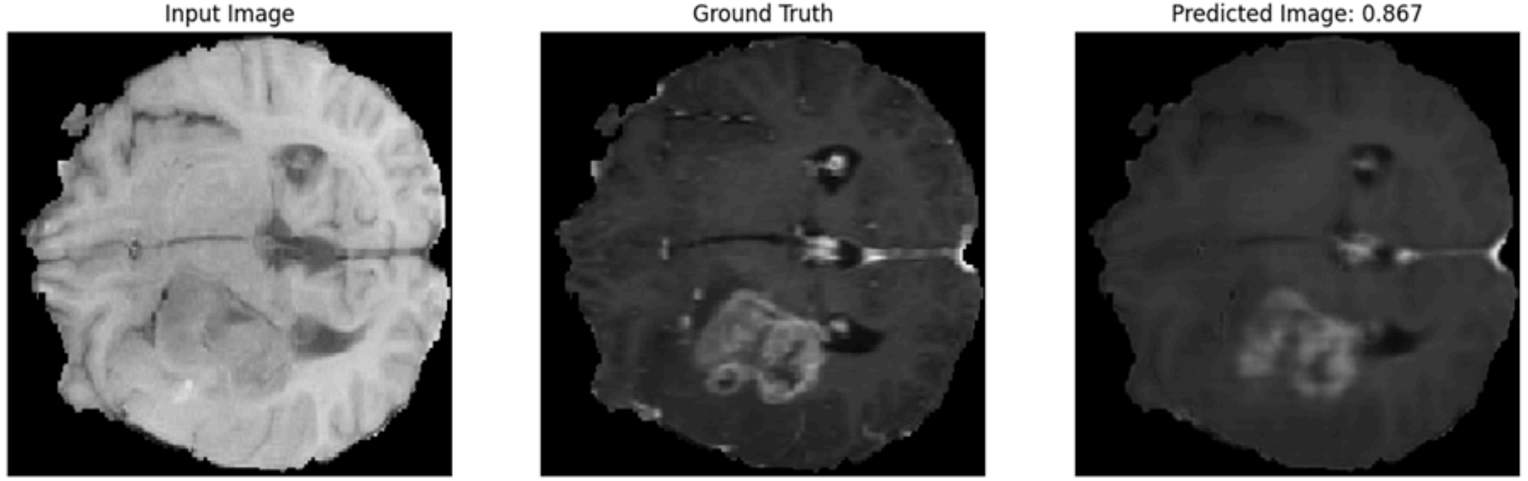
- After Changing Optimizer to SGD
- The Discriminator stay the same



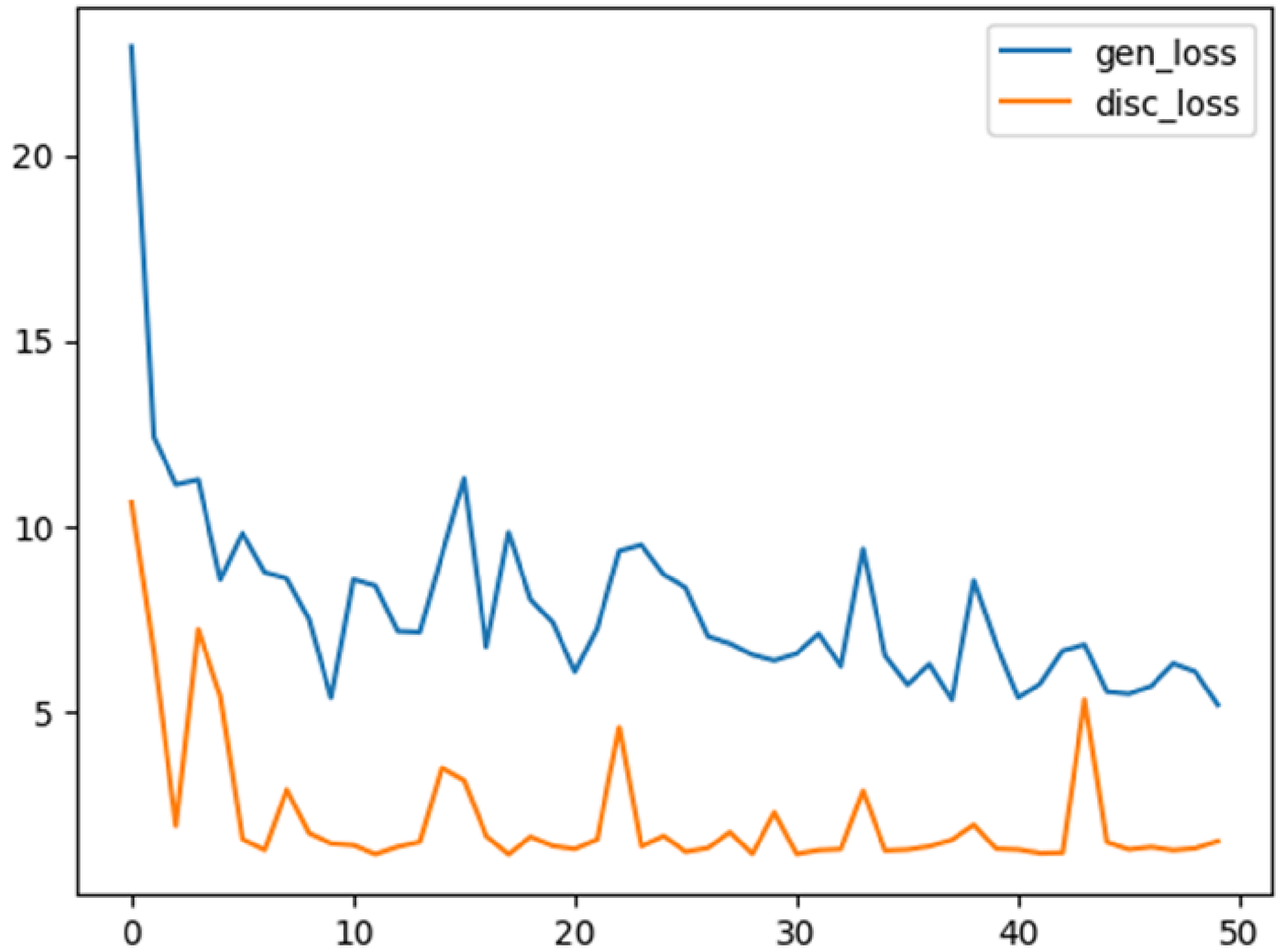
SSIM: 0.94



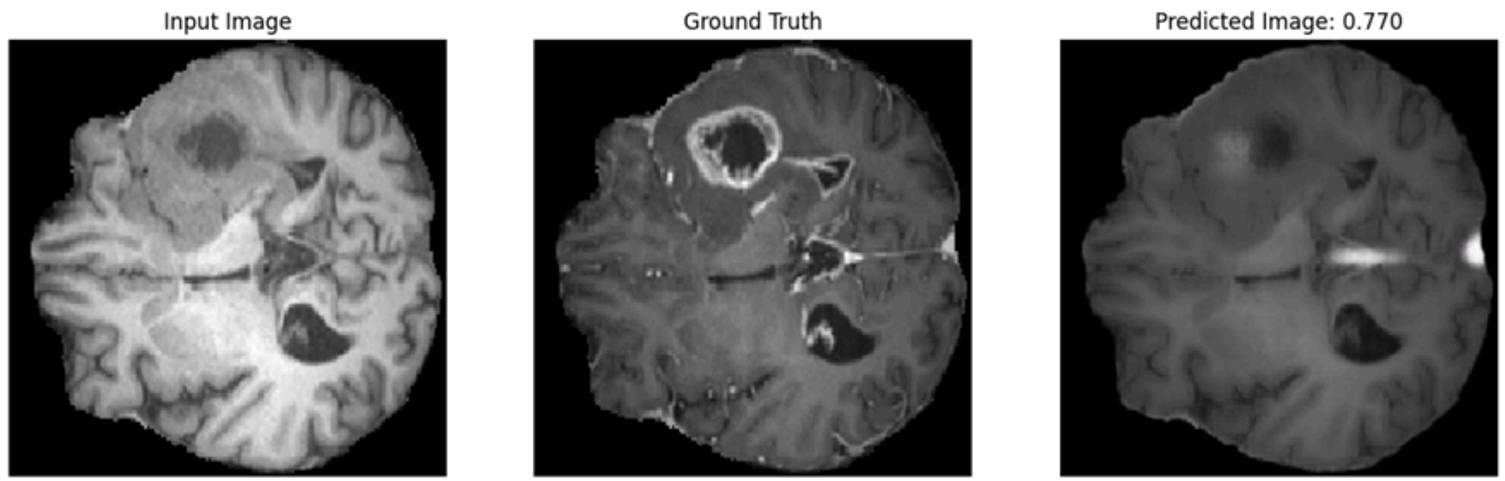
SSIM: 0.86



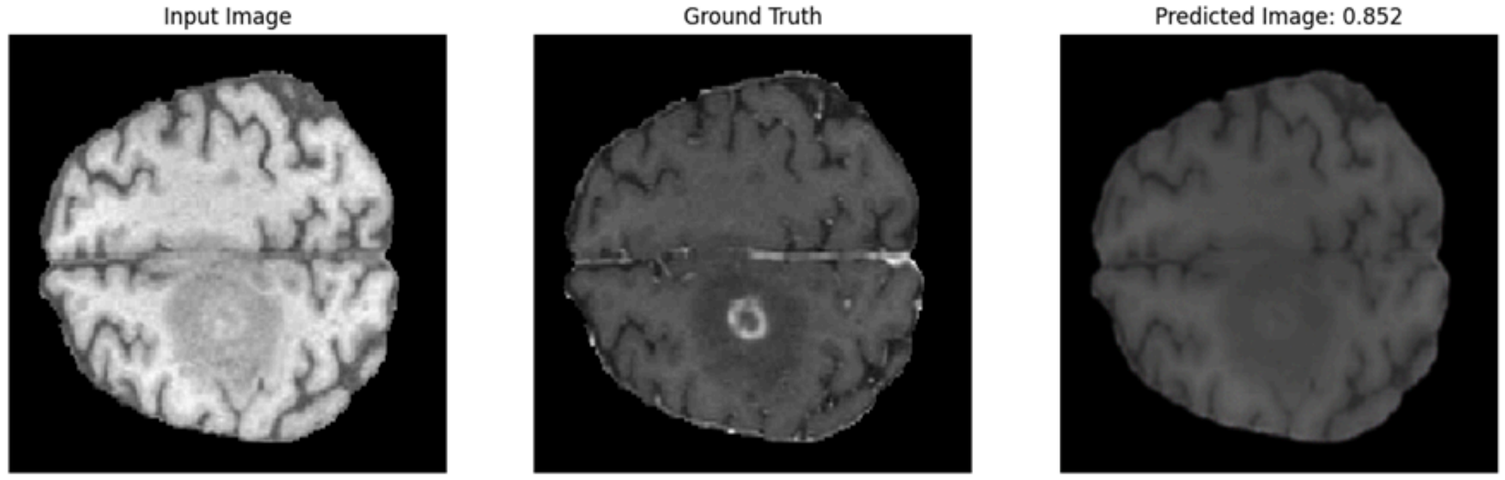
- Changing Optimizer to Adamax.
- The difference is significant.



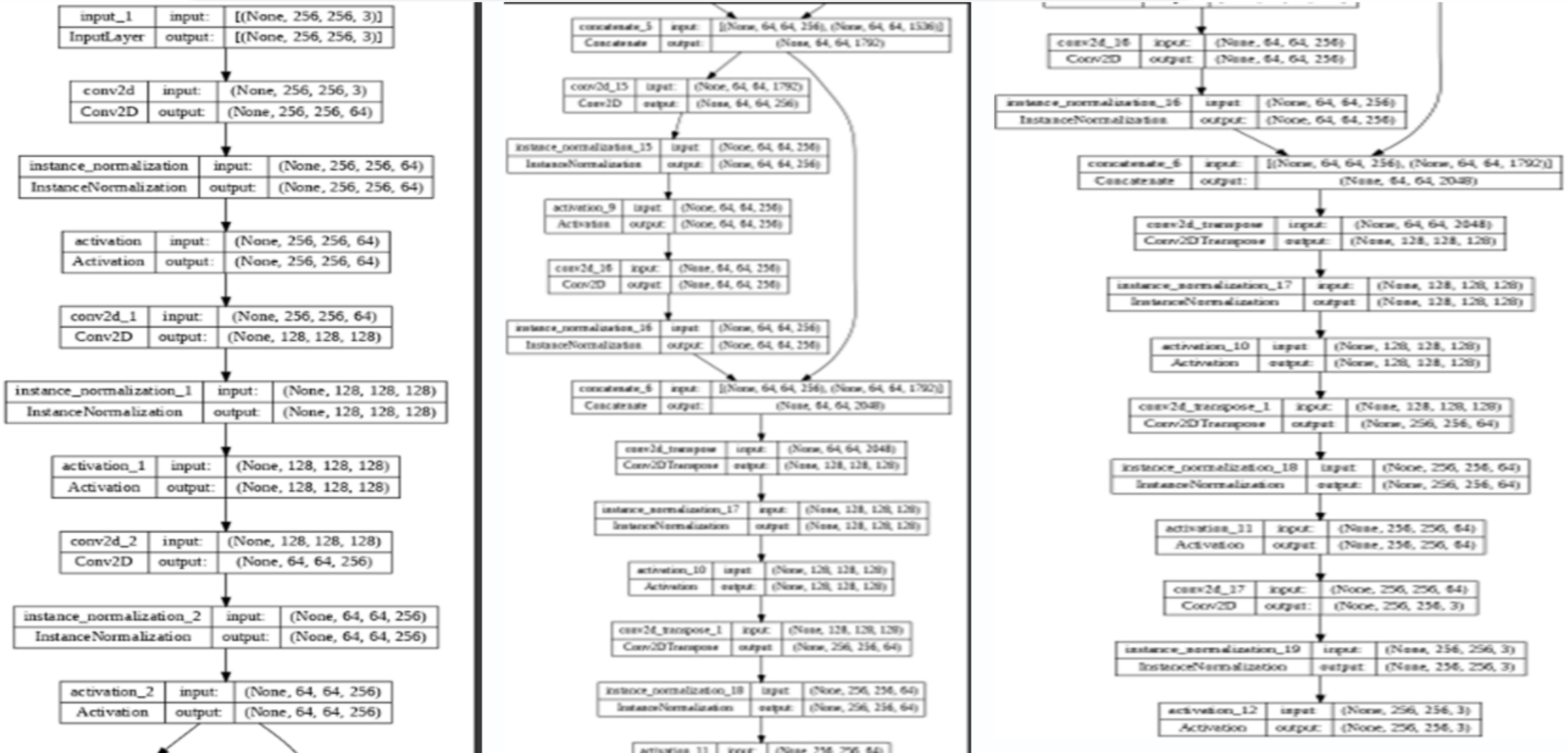
SSIM: 0.77



SSIM: 0.85

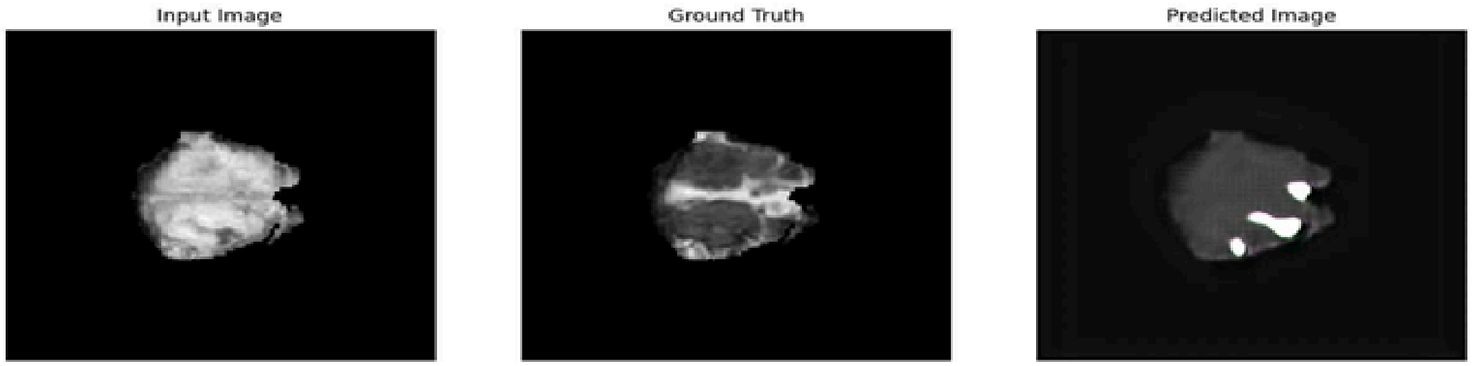


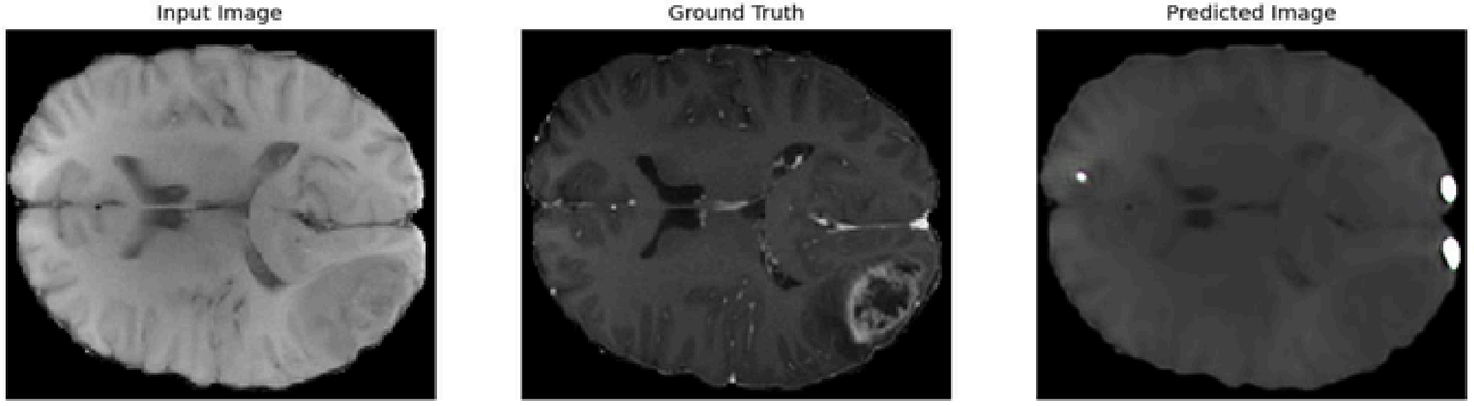
Rais_net (7)


input_1 | input: | [(None, 256, 256, 3)]
InputLayer | output: | [(None, 256, 256, 3)]
conv2d | input: | (None, 256, 256, 3)
Conv2D | output: | (None, 256, 256, 64)
instance_normalization | input: | (None, 256, 256, 64)
InstanceNormalization | output: | (None, 256, 256, 64)
activation | input: | (None, 256, 256, 64)
Activation | output: | (None, 256, 256, 64)
conv2d_1 | input: | (None, 256, 256, 64)
Conv2D | output: | (None, 128, 128, 128)
instance_normalization_1 | input: | (None, 128, 128, 128)
InstanceNormalization | output: | (None, 128, 128, 128)
activation_1 | input: | (None, 128, 128, 128)
Activation | output: | (None, 128, 128, 128)
conv2d_2 | input: | (None, 128, 128, 128)
Conv2D | output: | (None, 64, 64, 256)
instance_normalization_2 | input: | (None, 64, 64, 256)
InstanceNormalization | output: | (None, 64, 64, 256)
activation_2 | input: | (None, 64, 64, 256)
Activation | output: | (None, 64, 64, 256)
concatenate_5 | input: | [(None, 64, 64, 256), (None, 64, 64, 1536)]
Concatenate | output: | (None, 64, 64, 1792)
conv2d_15 | input: | (None, 64, 64, 1792)
Conv2D | output: | (None, 64, 64, 256)
instance_normalization_15 | input: | (None, 64, 64, 256)
InstanceNormalization | output: | (None, 64, 64, 256)
activation_9 | input: | (None, 64, 64, 256)
Activation | output: | (None, 64, 64, 256)
conv2d_16 | input: | (None, 64, 64, 256)
Conv2D | output: | (None, 64, 64, 256)
instance_normalization_16 | input: | (None, 64, 64, 256)
InstanceNormalization | output: | (None, 64, 64, 256)
concatenate_6 | input: | [(None, 64, 64, 256), (None, 64, 64, 1792)]
Concatenate | output: | (None, 64, 64, 2048)
conv2d_transpose | input: | (None, 64, 64, 2048)
Conv2DTranspose | output: | (None, 128, 128, 128)
instance_normalization_17 | input: | (None, 128, 128, 128)
InstanceNormalization | output: | (None, 128, 128, 128)
activation_10 | input: | (None, 128, 128, 128)
Activation | output: | (None, 128, 128, 128)
conv2d_transpose_1 | input: | (None, 128, 128, 128)
Conv2DTranspose | output: | (None, 256, 256, 64)
instance_normalization_18 | input: | (None, 256, 256, 64)
InstanceNormalization | output: | (None, 256, 256, 64)
conv2d_16 | input: | (None, 64, 64, 256)
Conv2D | output: | (None, 64, 64, 256)
instance_normalization_16 | input: | (None, 64, 64, 256)
InstanceNormalization | output: | (None, 64, 64, 256)
concatenate_6 | input: | [(None, 64, 64, 256), (None, 64, 64, 1792)]
Concatenate | output: | (None, 64, 64, 2048)
conv2d_transpose | input: | (None, 64, 64, 2048)
Conv2DTranspose | output: | (None, 128, 128, 128)
instance_normalization_17 | input: | (None, 128, 128, 128)
InstanceNormalization | output: | (None, 128, 128, 128)
activation_10 | input: | (None, 128, 128, 128)
Activation | output: | (None, 128, 128, 128)
conv2d_transpose_1 | input: | (None, 128, 128, 128)
Conv2DTranspose | output: | (None, 256, 256, 64)
instance_normalization_18 | input: | (None, 256, 256, 64)
InstanceNormalization | output: | (None, 256, 256, 64)
activation_11 | input: | (None, 256, 256, 64)
Activation | output: | (None, 256, 256, 64)
conv2d_17 | input: | (None, 256, 256, 64)
Conv2D | output: | (None, 256, 256, 3)
instance_normalization_19 | input: | (None, 256, 256, 3)
InstanceNormalization | output: | (None, 256, 256, 3)
activation_12 | input: | (None, 256, 256, 3)
Activation | output: | (None, 256, 256, 3)

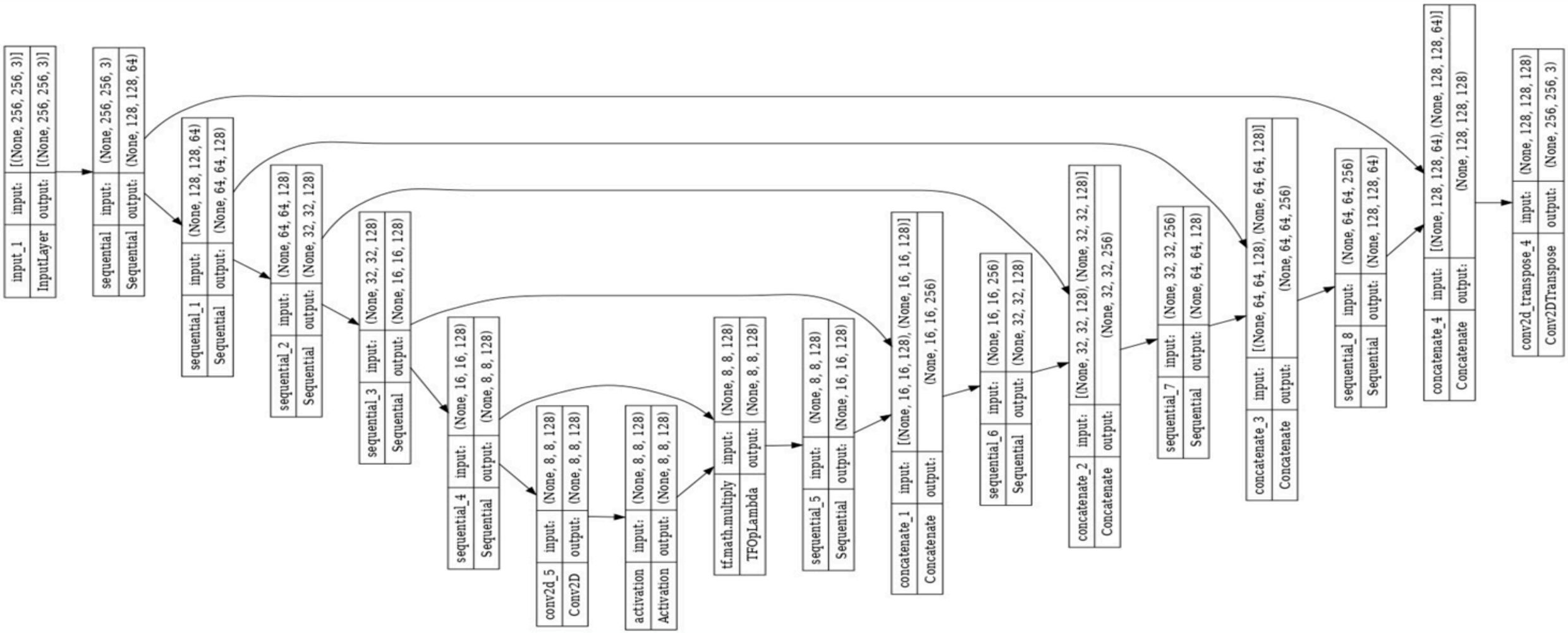
Rais net result

"Poor results, false tumor detections, and excessive time and resources consumed."



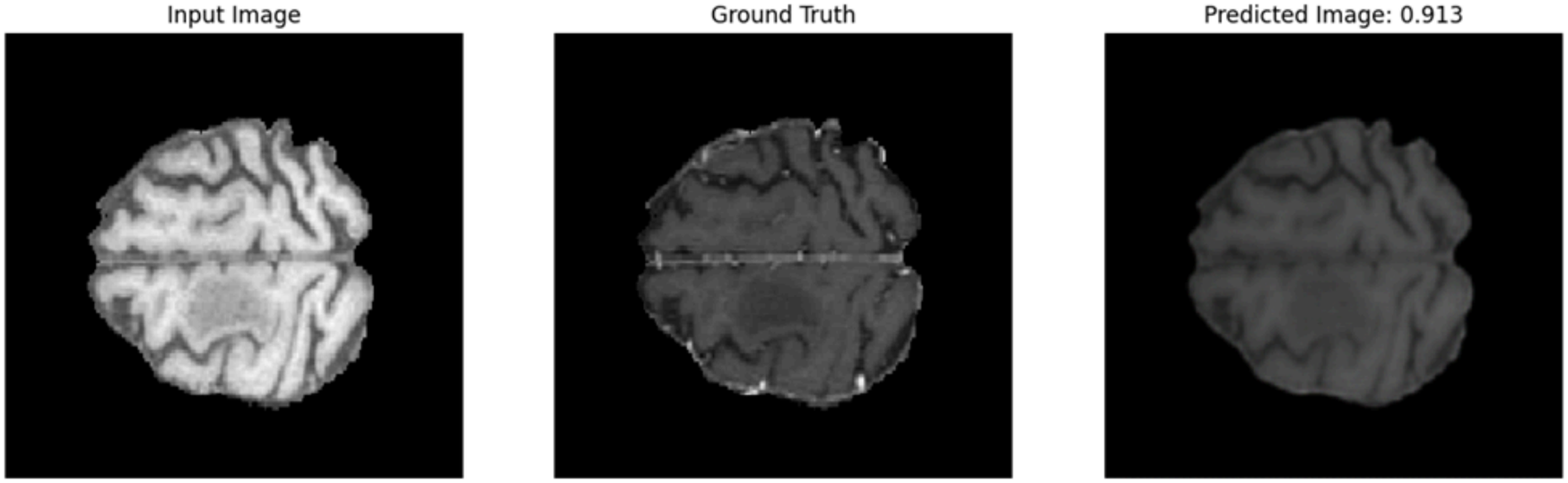


Attraction_model

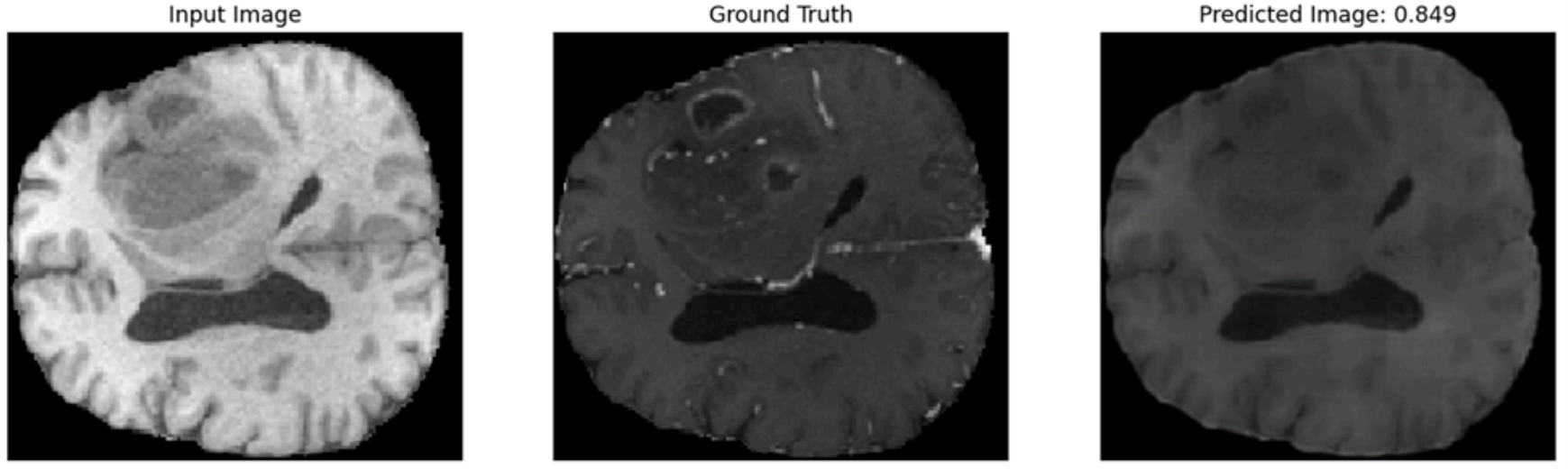


Attraction_model

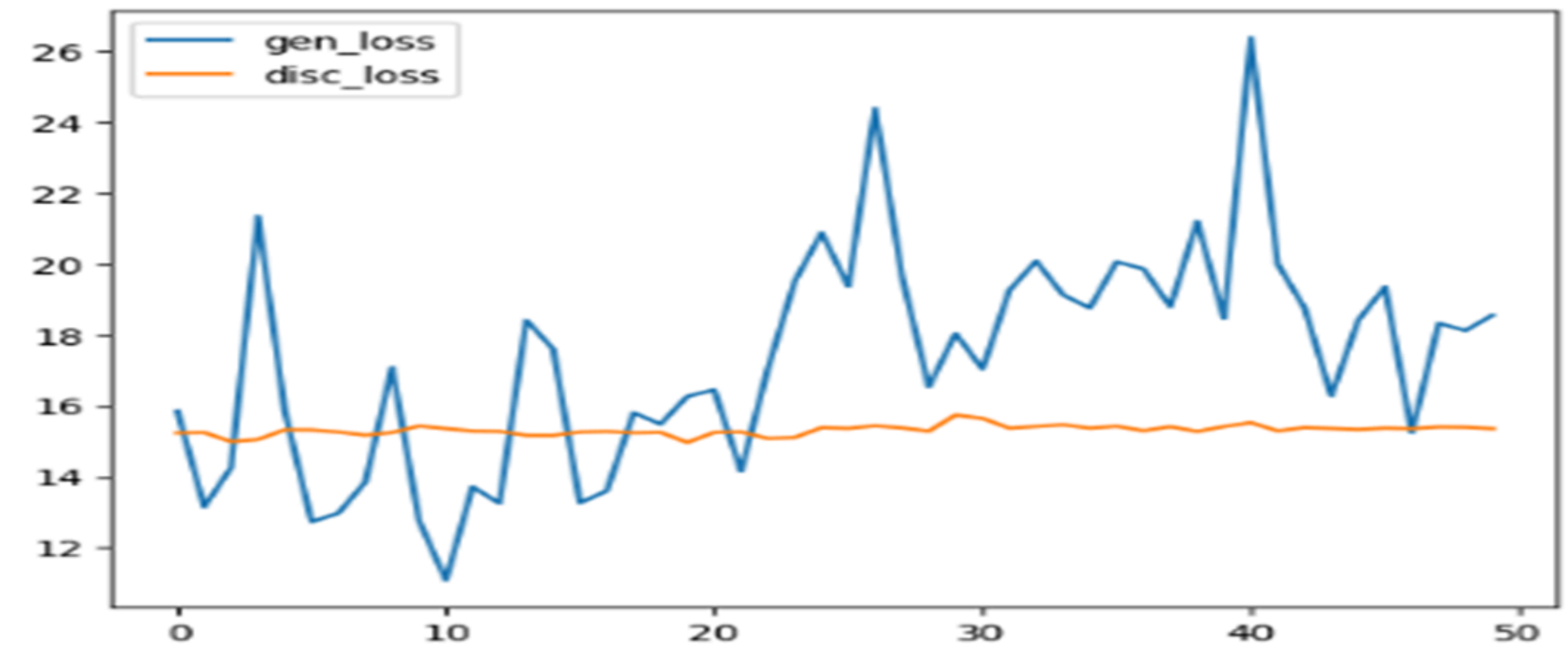
SSIM: 0.91



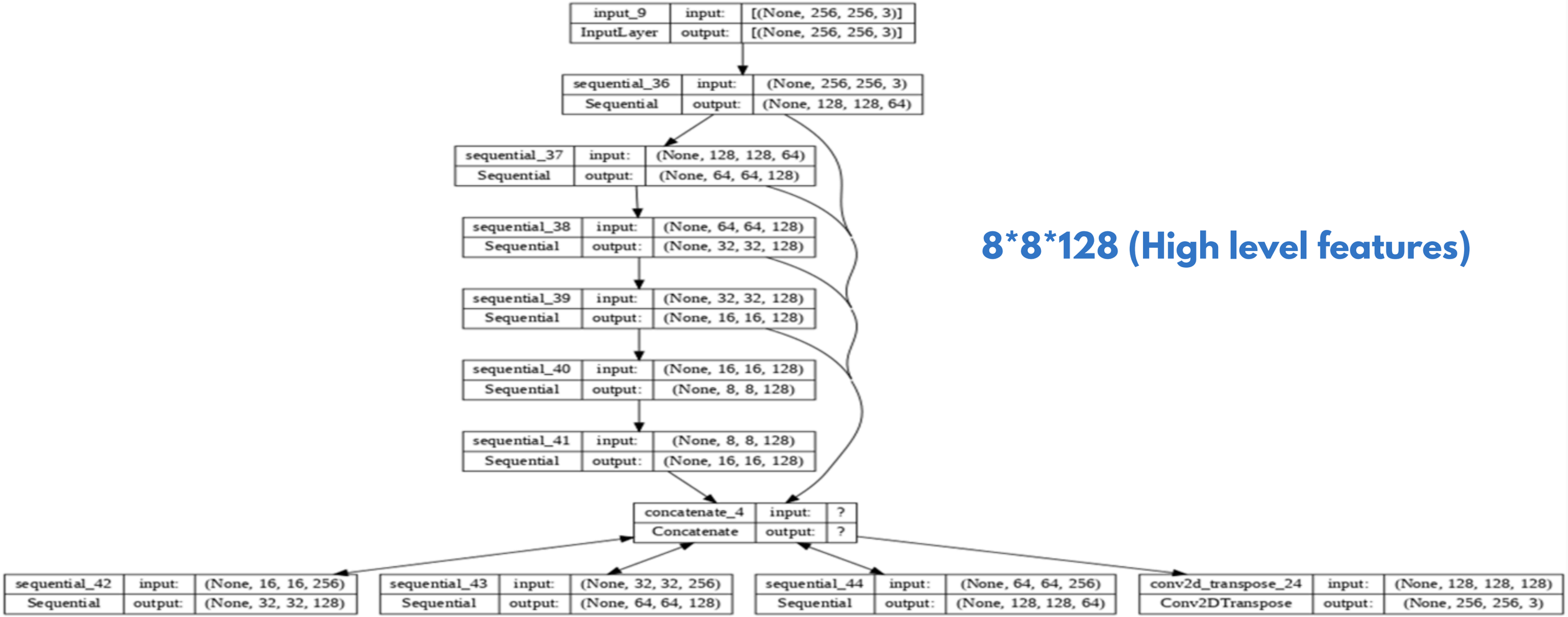
SSIM: 0.84



Losses



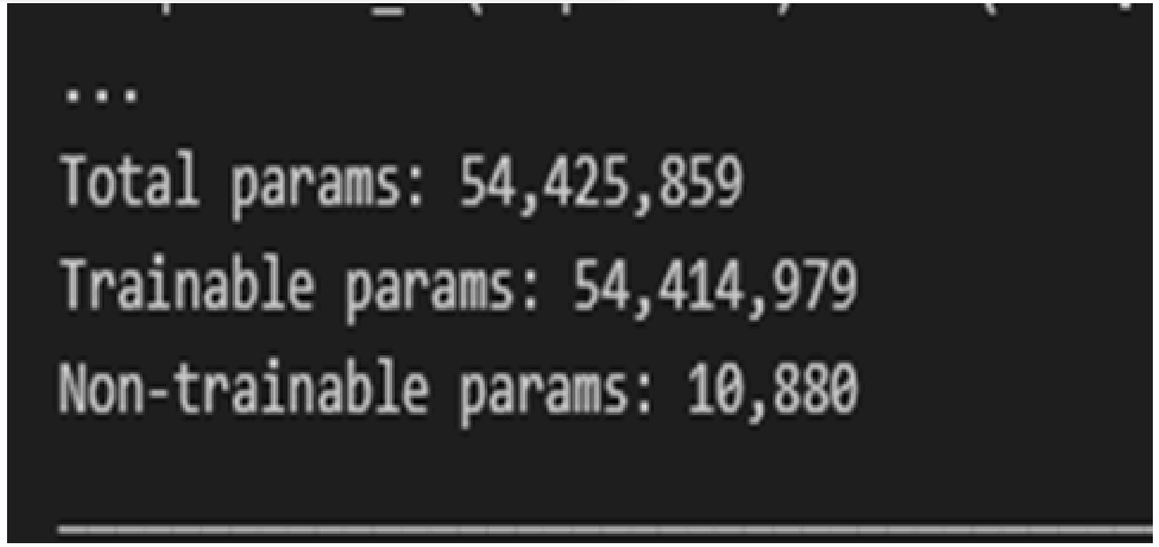
Modification U_NET

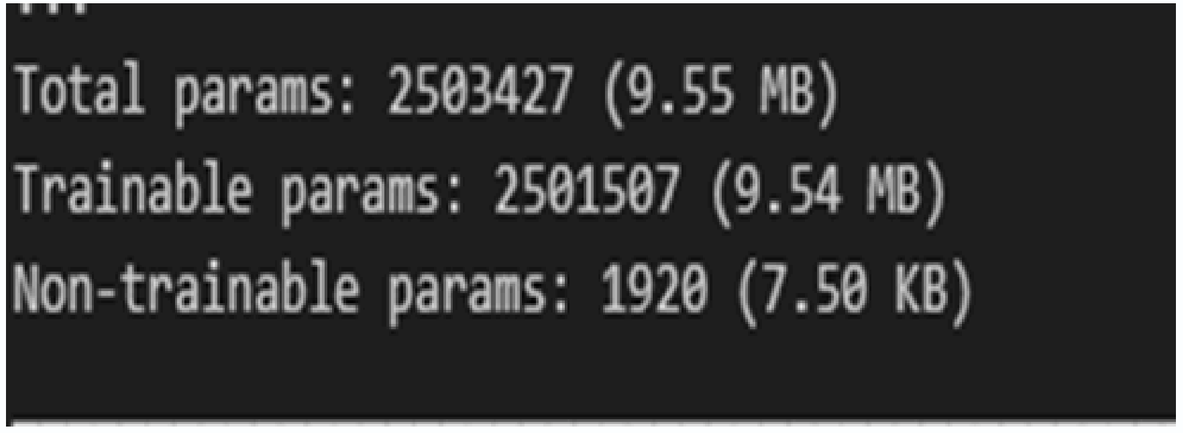


8*8*128 (High level features)

Decease the parameter

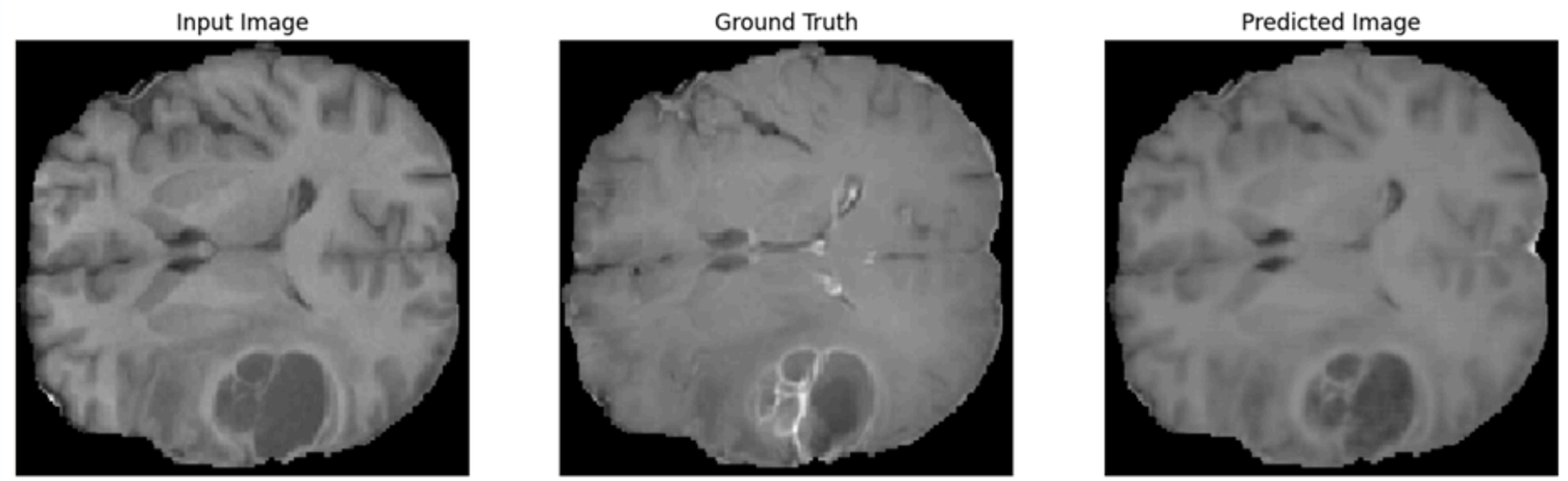
"Reduce the time spent on testing."

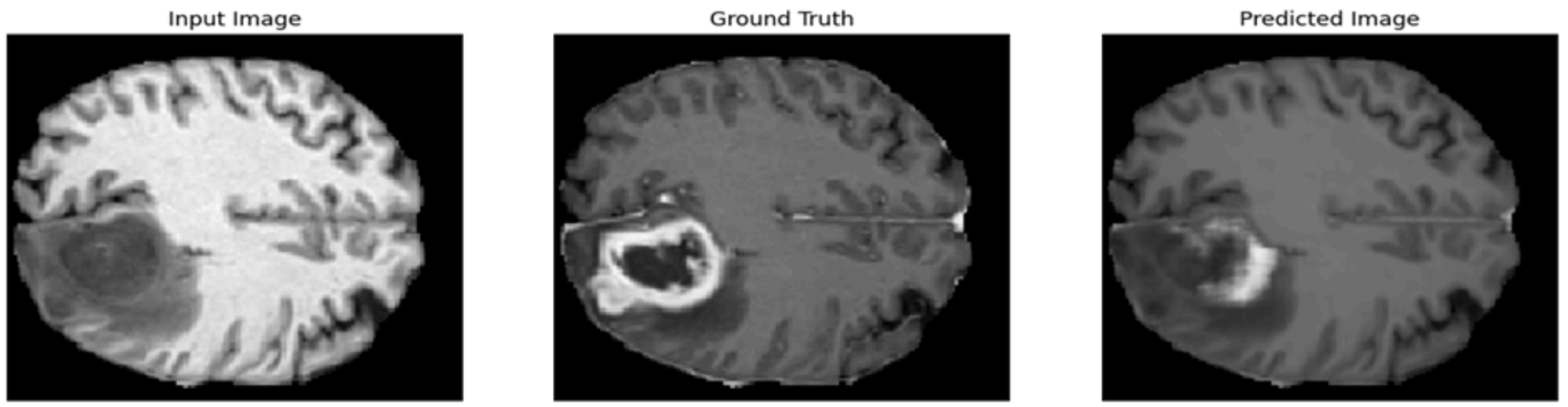




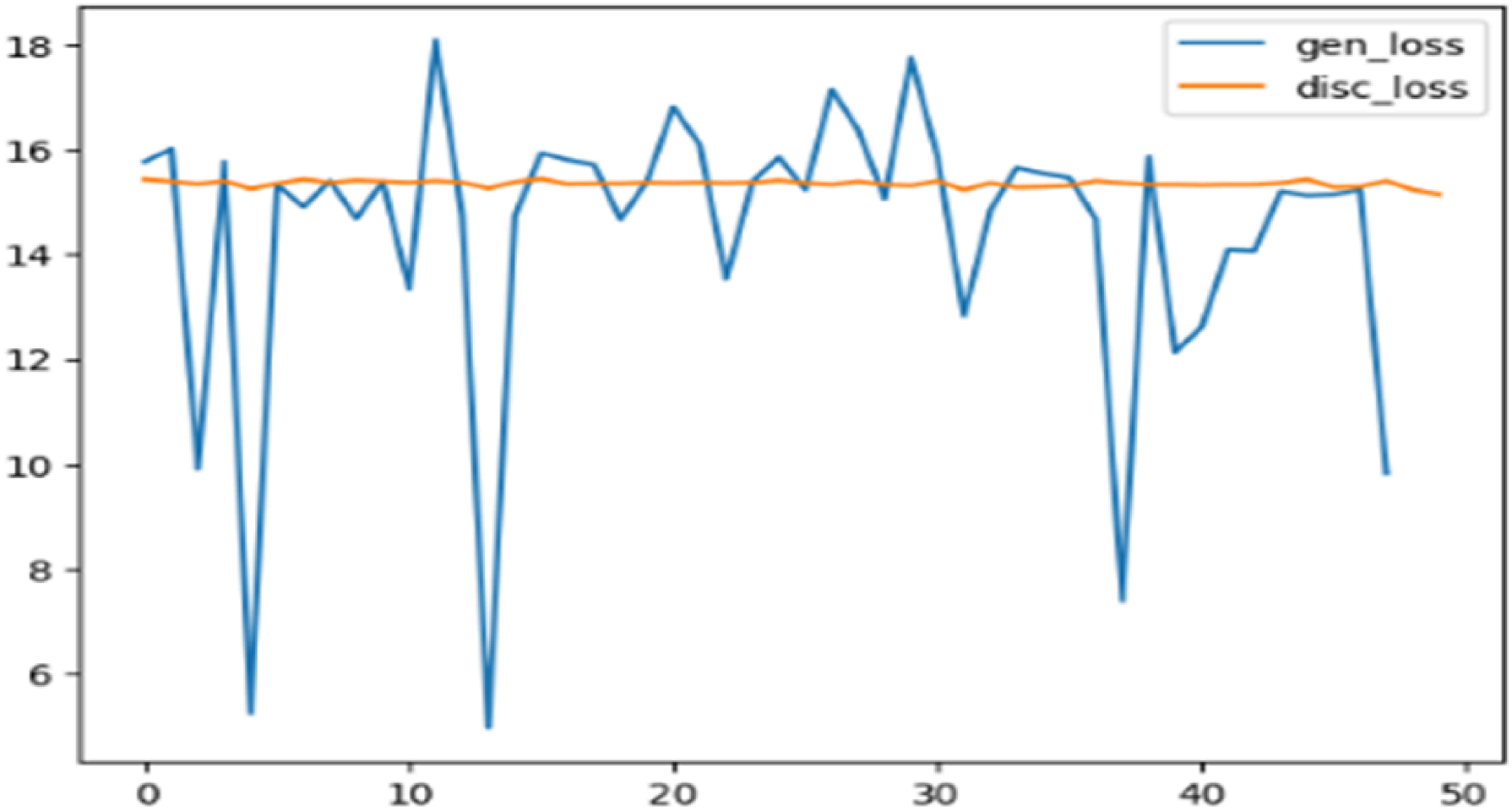
Modefaied unit rsult

"Accurate tumor contrast and detection."

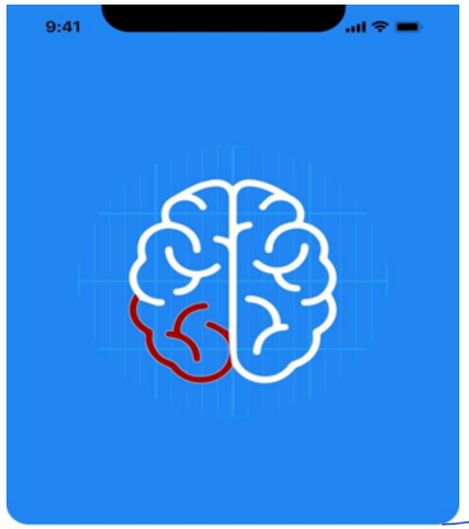


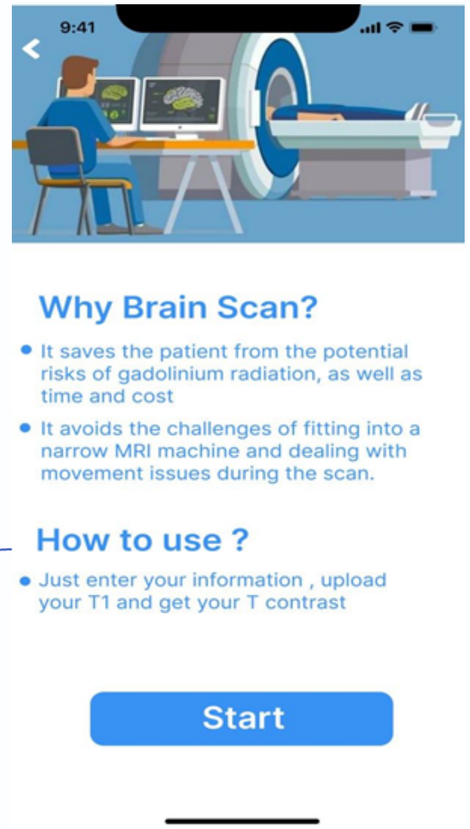


Modefaid losesst



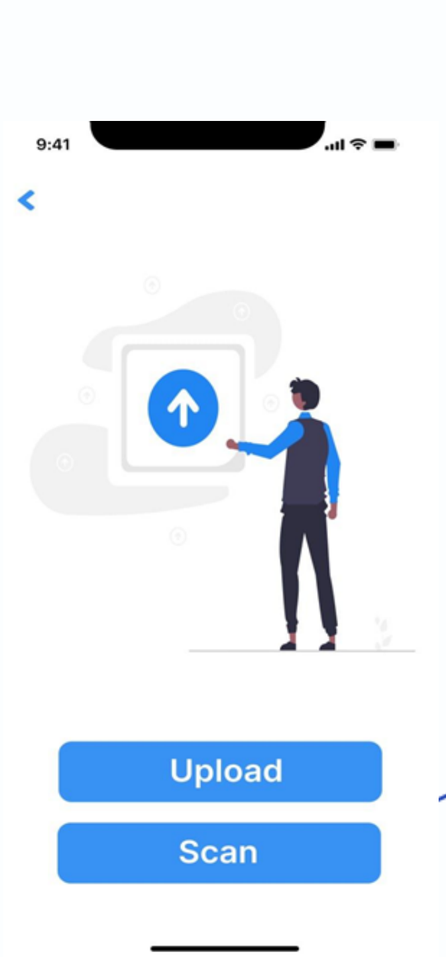
Deployment

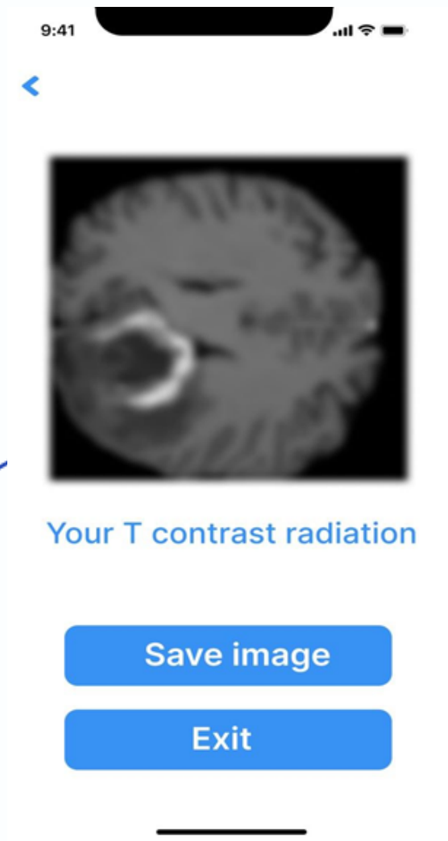




The first homepage should navigate to information about the brain scan app when you click on "Get Started."

Result of application





Please upload the image and provide the T-contrast image result.

THANK YOU