

Solar Orbiter Images Challenge

CODE MEGAFLARE - Sadia Marium, Moudud Hasan, Marvin Mez, Bastian Schuchardt and Felix Wersig

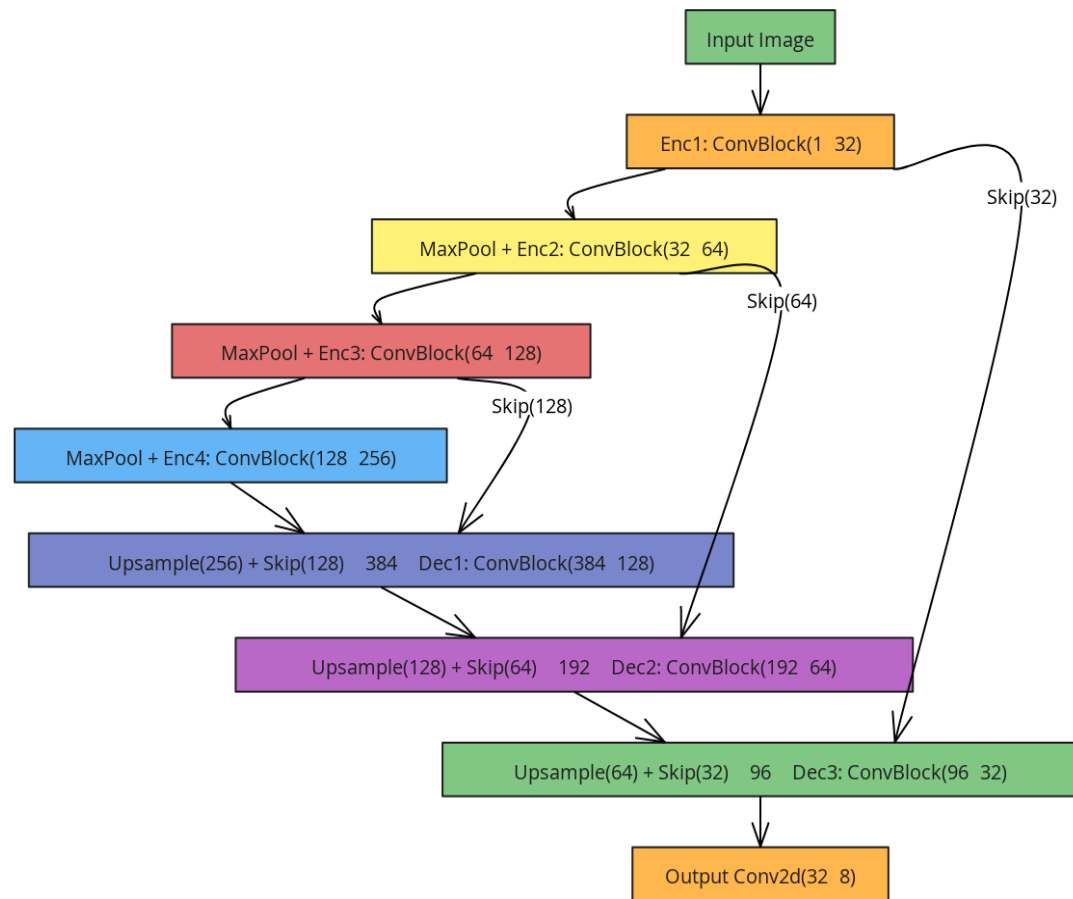
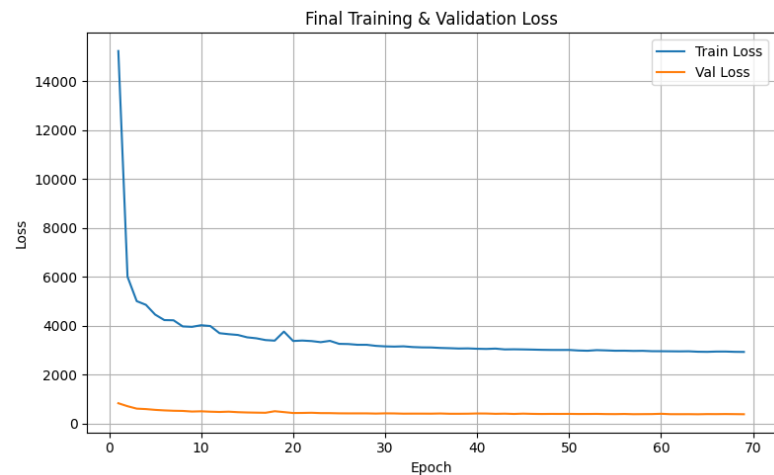


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Organization Among the Team

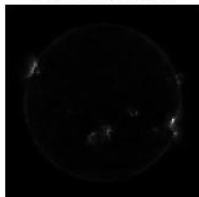
- .Explore multiple architectures
- .Bastian Schuchert and Moudud Hasas → Unet and Autoencoder
- .Felix Wersig → GAN (Unet generator)
- .Sadia Marium and Marvin Mez → Improve upon earlier results and presentation

UNet

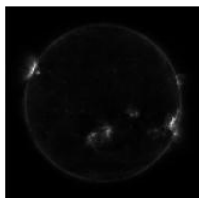


Unet results

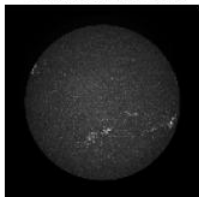
Original: 131A



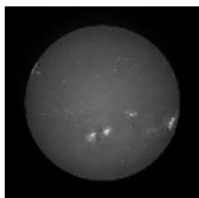
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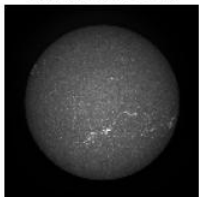
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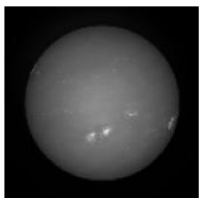
Pred: 1600A



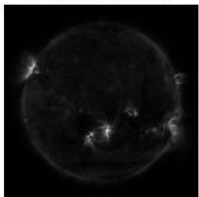
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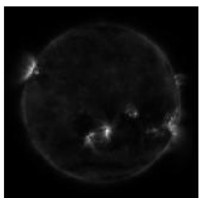
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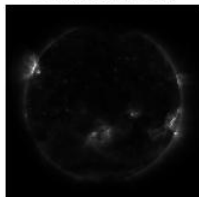
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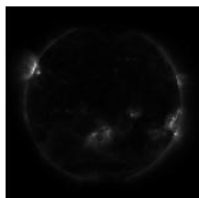
Pred: 171A



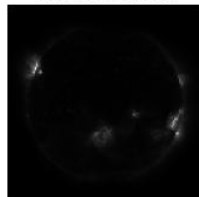
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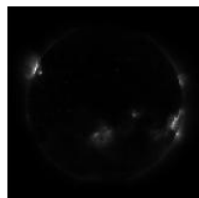
Pred: 193A



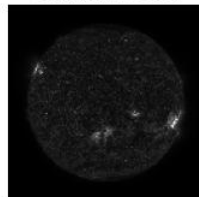
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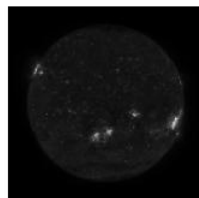
Pred: 211A



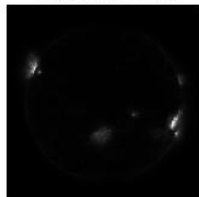
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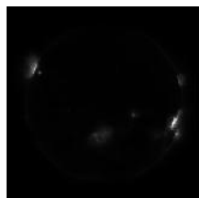
Pred: 304A



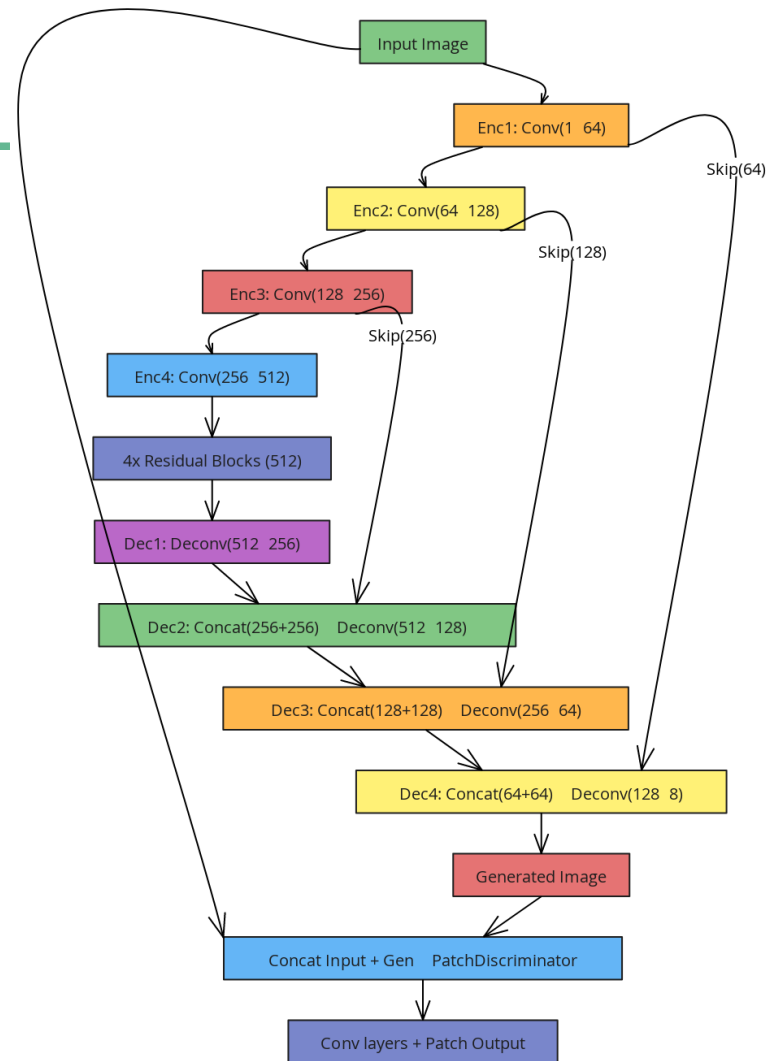
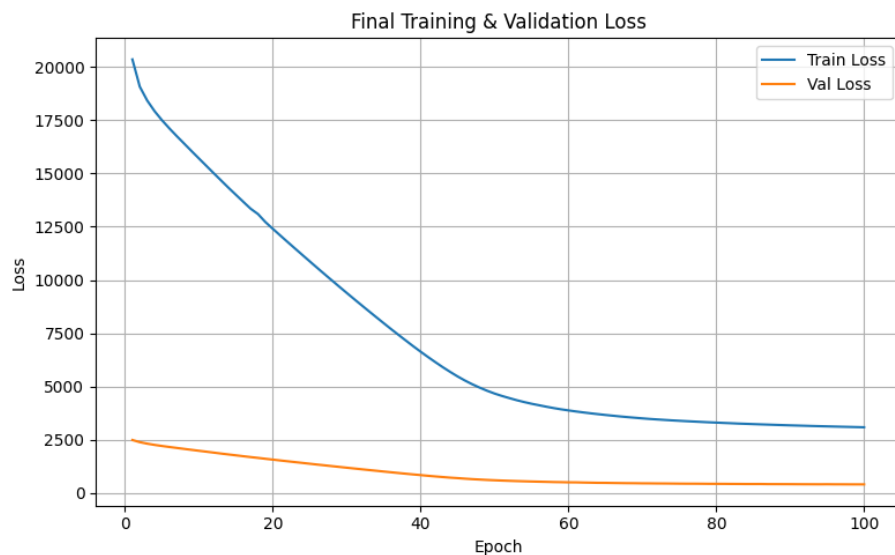
Original: 335A



Pred: 335A

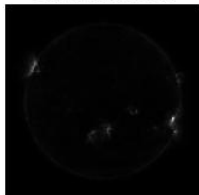


GAN

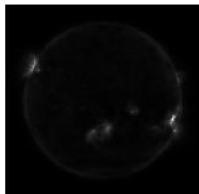


GAN results

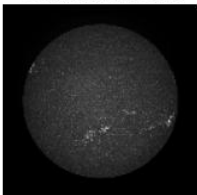
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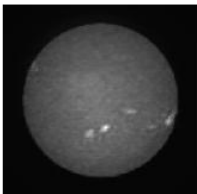
Pred: 131A



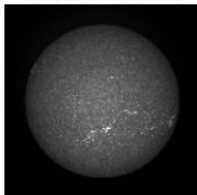
Original: 1600A



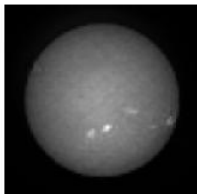
Pred: 1600A



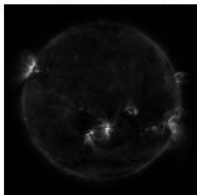
Original: 1700A



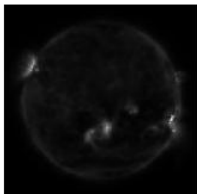
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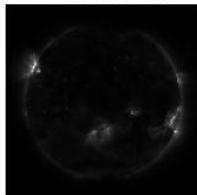
Original: 171A



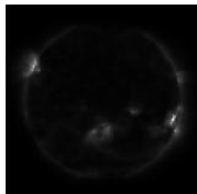
Pred: 171A



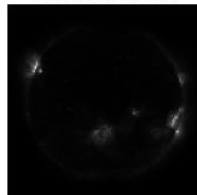
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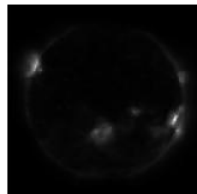
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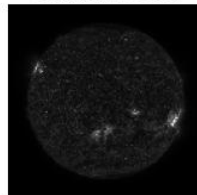
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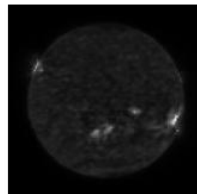
Pred: 211A



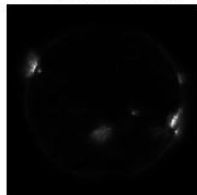
Original: 304A



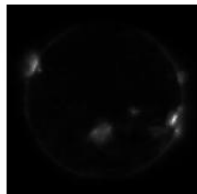
Pred: 304A



Original: 335A



Pred: 335A



Environmental Impact

Unet (64 epochs)

26 g 

GAN (100 epochs)

56 g 

Comparison: A typical gasoline car emits around **4 kg of CO₂** during a 30-minute drive.

Outlook

- Stick to the model we've got so far.
- Remove the diagonal stripes by rotating the images.
- Better loss-function than L1Loss