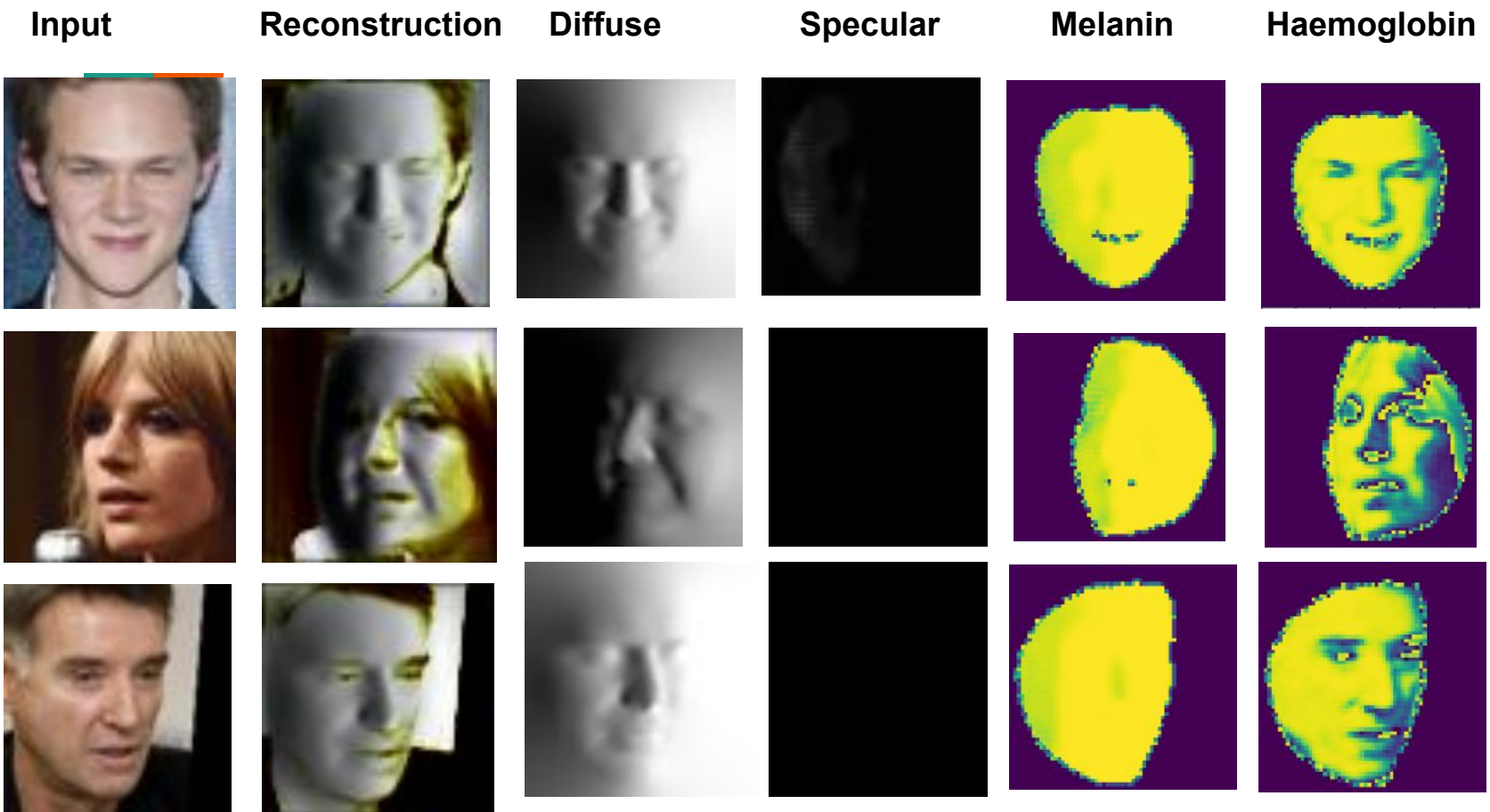
VMG Candidate Project 2021

Diplav

Training Configuration

Hyper parameter	Value
Input Size	64 X 64 X 3
Learning Rate	1 e-5
Optimizer	Adam $\beta 1 = 0.9$, $\beta 2 = 0.99$
Batch Size	32
Total epochs	100

Results


Input
Reconstruction
Diffuse
Specular
Melanin
Haemoglobin

Improvement Suggestion

- Try a combination of losses such as Perceptual (vgg18) loss[1] and structural similarity index measure (SSIM loss)[2] used in Image Reconstruction task in Appearance loss.
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- Try exploring attention module such as Spatial and Channel Attention[3] block in the Unet module which helps in selecting feature which are most useful and discarding less relevant feature, multi-scale residual block (MSRB)[4] blocks which detect image feature at multiple scale using kernel of different size 3,5,7 so as to fully exploit the potential feature of image.
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- Try using weak supervision for specular shading[5] too.

References

[1]https://deepai.org/machine-learning-glossary-and-terms/perceptual-loss-function

[2] Zhao, Hang, et al. "Loss functions for image restoration with neural networks." *IEEE Transactions on computational imaging* 3.1 (2016): 47-57.

[3] Woo, Sanghyun, et al. "Cbam: Convolutional block attention module." *Proceedings of the European conference on computer vision (ECCV)*. 2018.

[4] Li, Juncheng, et al. "Multi-scale residual network for image super-resolution." *Proceedings of the European Conference on Computer Vision (ECCV)*. 2018.

[5] Li, Chen, et al. "Specular highlight removal in facial images." *Proceedings of the ieee conference on computer vision and pattern recognition*. 2017.