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Image Synthesis Using Generative Adversarial Network

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Abstract: *Generative Adversarial Networks (GANs) are a deep learning based generative model. GANs are a model for training a generative model and it is common to use deep learning models. Generative Adversarial Network(GANs) are a powerful class of neural networks that are used for unsupervised learning. GANs are basically made up of two competing neural network models which compete with each other and are able to analyze, capture and copy the variations within dataset. GANs achieve high level realism by pairing a generator which learns to produce a target output with a discriminator which learns to distinguish true data from the output of the generator. GANs used for Image Synthesis generates high resolution images. Text to face generation is a sub domain of text to image synthesis, and it has a huge impact along with the wide range of applications on public safety domain. Our proposed fully trained GAN outperformed by generating the good quality images with accordance to the input sentence. StackGAN aims at generating high resolution photorealistic images. The Stage-I GAN sketches the primitive shape and colors of a scene based on a given text description, yielding low-resolution images. The Stage-II GAN takes Stage-I results and the text description as inputs, and generates high-resolution images with photo-realistic details.*

Keywords: Generative Adversarial Network (GAN), Stage-I GAN, Stage-II GAN

REFERENCES

[1]. E. Mansimov, E. Parisotto, L. J. Ba, and R. Salakhutdinov. Generating images from captions with attention. In ICLR, 2016.
[2]. S. Reed, A. van den Oord, N. Kalchbrenner, V. Bapst, M. Botvinick, and N. de Freitas. Generating interpretable images with controllable structure. Technical report, 2016.
[3]. Samaneh Azadi, Matthew Fisher, Vladimir Kim, Zhaowen Wang, Eli Shechtman, and Trevor Darrell. Multi-content GAN for few-shot font style transfer. In IEEE Conference on Computer Vision and Pattern Recognition, CVPR '18, pages 7564–7573, 2018.
[4]. Scott Reed, Zeynep Akata, Xinchen Yan, Lajanugen Logeswaran, Bernt Schiele, Honglak Lee. Generative Adversarial Text to Image Synthesis. 2016.
[5]. Yun Fu, Guodong Guo, and Thomas S Huang, "Age synthesis and estimation via faces: A survey," IEEE . 32, no. 11, pp. 1955–1976, 2010.
[6]. Rahul Nehra, Abhisikta Pal and B Baranidharan, "Radiological Image Synthesis Using Cycle-Consistent Generative Adversarial Netwrok". EasyChair Reprint No.5338.
[7]. Nilsback, Maria-Elena, and Andrew Zisserman. "Automated flower classifi- cation over a large number of classes." Computer Vision, Graphics & Image Processing, 2008. ICVGIP'08. Sixth Indian Conference on. IEEE, 2008.
[8]. Goodfellow, Ian, et al. "Generative adversarial nets." Advances in neural information processing systems. 2014.
[9]. Zhang, Han, et al. "Stackgan++: Realistic image synthesis with stacked generative adversarial networks." arXiv preprint arXiv:1710.10916 (2017).
[10]. J.-Y. Zhu, P. Krähenbühl, E. Shechtman, and A. A. Efros, "Generative visual manipulation on the natural image manifold," in European Conference on Computer Vision. pp. 597–613 Springer, 2016,
[11]. K. Bousmalis, N. Silberman, D. Dohan, D. Erhan, and D. Krishnan, "Unsupervised pixel-level domain

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adaptation with generative adversarial networks," in IEEE Conference on Computer Vision and Pattern Recognition, 2016.

[12]. Brandon Amos, Bartosz Ludwiczuk, and Mahadev Satyanarayanan. OpenFace: A general-purpose face recognition library with mobile applications. Technical report, CMUCS- 16-118, CMU School of Computer Science, 2016.