

Personal Inquiry

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Abstract

With the development of artificial intelligence, deep learning has become a very popular algorithm in recent years. It is used in so many areas, such as information retrieval, object recognition, audio process and so on. In the process of research, I found some interesting applications in computer vision which attracts me extremely. I really want to make an attempt to combine animation with deep learning if it possible. For further research, I did an in-depth study of deep learning, understood the principle of this algorithm, got the structure of it, and learned how to use it. I will show my understanding in my presentation, use specific example to explain and share some interesting applications.

Annotated Bibliography

Schmidhuber, J., 2015. Deep learning in neural networks: An overview. *Neural Networks*, 61, 85-117.

[Annotation]

This is an overview of deep learning, it provides the overall information about deep learning, very helpful for beginners to learn about deep learning. In addition, it collected many relative papers and divided the class logical and clearly. I use this like a dictionary, find related method by checking the key words in this overview. But there is a minor flaw that the paper collected in this overview not the latest, some methods are out of date.

Deshpande, A., 2017. Adit Deshpande – CS Undergrad at UCLA ('19). [online] Available from: <https://adeshpande3.github.io/adeshpande3.github.io/>

[Annotation]

This is a student blog who focus on machine learning research in UCLA. It provides rich resources about machine learning and very detailed algorithm. It also provides tutorials and codes which is very practical. And it updated very often. There are very useful content to understand the neural network.

Holden, D., Saito, J. and Komura, T., 2016. A deep learning framework for character motion synthesis and editing. *ACM Transactions on Graphics*, 35 (4), 1-11.

[Annotation]

This paper presents a framework to synthesize character movements based on high level parameters, such that the produced movements respect the manifold of human motion, trained on a large motion capture dataset. This deep learning framework to map high level parameters to an output motion by first learning a motion manifold using a large motion database and then producing a mapping between the user input to the output motion. And

also propose approaches to edit and transform the styles of the motions under the same framework.

J. Champanard, A., 2016. Semantic Style Transfer and Turning Two-Bit Doodles into Fine Artwork.

[Annotation]

This paper introduces a novel concept to augment such generative architectures with semantic annotations, either by manually authoring pixel labels or using existing solutions for semantic segmentation.

Anon, 2015. Deep Learning SIMPLIFIED: The Series Intro - Ep. 1. [online] YouTube.

Available from: <https://www.youtube.com/watch?v=b99UVkWzYTQ>

[Annotation]

This is a series of deep learning simplified introduction. The focus is on the intuition behind Deep Learning – what it is, how to use it, who's behind it, and why it's important. It gives me an overview of Deep Learning and a brief introduction of how to choose between different models.

Reference

Agüera y Arcas, B., 2016. *How computers are learning to be creative*. [video]

Available from:

https://www.ted.com/talks/blaise_aguera_y_arcas_how_computers_are_learning_to_be_creative?language=en [Accessed 14 May 2017].

Gatys, L., Ecker, A. and Bethge, M., 2016. A Neural Algorithm of Artistic Style. *Journal of Vision*, 16 (12), 326.

Hwang, J. and Zhou, Y., n.d. Image Colorization with Deep Convolutional Neural Networks.

HOLDEN, D., KOMURA, T. and SAITO, J., 2017. Phase-Functioned Neural Networks for Character Control.

Selim, A., Elgharib, M. and Doyle, L., 2016. Painting style transfer for head portraits using convolutional neural networks. *ACM Transactions on Graphics*, 35 (4), 1-18.