

Photo Realistic Generation from Arabic Text Description Based on Generative Adversarial Networks

SARA MAHER

Mathematics Department, Faculty of Science, Benha University, Benha, Egypt, sara.mohamed@fsc.bu.edu.eg

MOHAMED LOEY

Computer Science Department, Faculty of Computer and Artificial intelligence, Benha University, Benha, Egypt, mloey@fci.bu.edu.eg

Generating accurate high-resolution images from text representations is a difficult problem in computer vision that has a wide range of functional applications. Text-to-image conversion is not dissimilar to the difficulties inherent in language processing. For example, each text meaning can be encoded in two distinct human languages, while photographs and text are two distinct encoding languages for similar data. However, these are two distinct issues, since text-to-image or image-to-text conversions are extremely multimodal in nature. The proposed model for creating 256x256 realistic images from Arabic text descriptions is discussed in this article. The relationship between an Arabic word in a sentence and its component in a picture as introduced in this paper using the DAMSM model. This model teaches two neural networks how to map the Arabic picture and word sub-regions of a full sentence to a shared semantic model. It performs well as an Arabic-text encoder and a picture encoder. We start with the Modified-Arabic dataset and train the model from scratch. The proposed model establishes a new standard for the conversion of Arabic text to realistic pictures. A mutation happens when Arabic is used as the primary language for converting Arabic texts to real images. The inception score of the newly introduced model reported by $3.42 \pm .05$ on the CUB database.

Keywords: Generative Adversarial Networks (GANs), Natural Language Processing (NLP), Text-to-Image Synthesis, Imagerealistic generation.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

© 2022 Copyright held by the owner/author(s).

2375-4699/2022/1-ART1 \$15.00

<http://dx.doi.org/10.1145/3490504>

ACM Trans. Asian Low-Resour. Lang. Inf. Process.