Video Imagination from a Single Image with Transformation Generation

A Seminar Report Submitted by

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UNDER THE GUIDANCE OF

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in partial fulfillment of the requirements for the award of the Degree of

Bachelor of Engineering in
Computer Science & Engineering

from

Visvesvaraya Technological University, Belagavi

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B.E. CSE Program Accredited by NBA, New Delhi from 1-7-2018 to 30-6-2021

CERTIFICATE

Certified that the Seminar entitled

VIDEO IMAGINATION FROM A SINGLE IMAGE WITH TRANSFORMATION GENERATION

is a bonafide work carried out by

P Dhanya S Nayak(4NM16CS089)

in partial fulfilment of the requirements for the award of

Bachelor of Engineering Degree in Computer Science and Engineering
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It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library.

The seminar report has been approved as it satisfies the academic requirements in respect of the seminar work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

In this work, we focus on a challenging task: synthesizing multiple imaginary videos given a single image. Major problems come from high dimensionality of pixel space and the ambiguity of potential motions. To overcome those problems, we propose a new framework that produce imaginary videos by transformation generation. The generated transformations are applied to the original image in a novel volumetric merge network to reconstruct frames in imaginary video. Through sampling different latent variables, our method can output different imaginary video samples. The framework is trained in an adversarial way with unsupervised learning. For evaluation, we propose a new assessment metric *RIQA*. In experiments, we test on 3 datasets varying from synthetic data to natural scene. Our framework achieves promising performance in image quality assessment. The visual inspection indicates that it can successfully generate diverse five-frame videos in acceptable perceptual quality.

KEYWORDS

Transformation Generation, Generative Models, Adversarial Training, Video Synthesis