

Generating Expressive Facial Mesh Animation : A Survey

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Abstract

With technology allowing for increasing realism in games and movies, facial animation is still a very challenging task.

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1. Introduction

Psychologically, Human tend to be very sensitive to facial motion. Slightest uncanniest in facial animation is directly lead to hurt overall experience of embodiment, and overall experience [3]. So, delivering natural expressive facial animation is a great interest in graphics field.

To render realistic 3D face animation that naturally, high-quality animation is required. Animating high-quality expressive face is very labor-intensive job when done by animator. Another approach is to capture human face animation in 3D. Face capture is a well-understood field(cite here), yet such approach requires gigabytes of data from expensive capture system, and is hard to manipulate. Therefore, it is necessary to simplify such process.

To simplify such process, one can automatically generate facial animation or can simplify animating produce.

In this survey, I introduce and compare three research that animate expressive facial animation :

- JALI [1] and VisimeNet [6], a linguistic approach to lip-sync.
- MeshTalk [5], a deep learning method.
- D3DExpression [4], LSTM method which replicate facial expression.

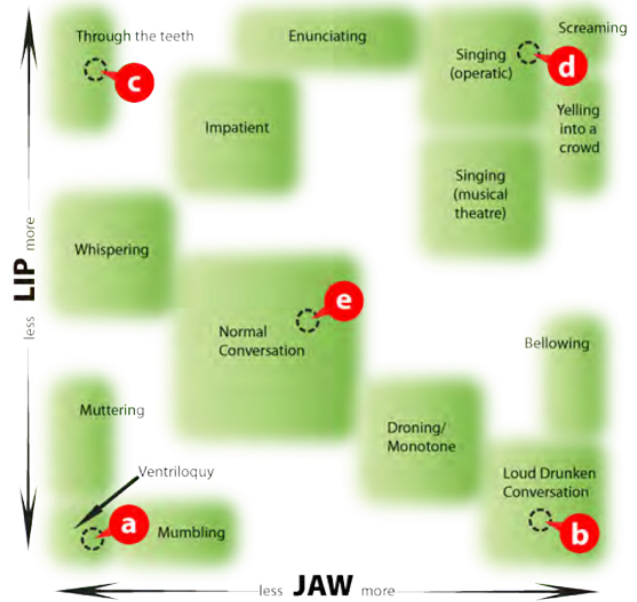


Figure 1. Speaking styles of JALI viseme field

2. Methods

2.1. JALI and VisimeNet

Creating lip-sync animation is complex and challenging task. Lip-sync is traditionally done by linguistic approach. Mapping text to phonemes, then visemes, the position of lip and jaw [2]. Phonemes to visemes is a complex many-to-many mapping.

JALI [1] addresses this problem by taking jaw and lip activation multipliers into consideration, since jaw and lip is the most significant acoustic motion in face. As shown on Fig. 1, different speaking styles shows different jaw lip activation level. JALI

Creating lip-sync animation from audio signal only is an attractive approach since it does not require any costly camera or tracking device.

This approach requires extracting viseme and jaw-lip model sequence from audio.

References

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