



PROBABILISTIC METHODS FOR VIDEOREALISTIC SPEECH ANIMATION

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Abstract

Videorealistic speech animation deals with re-animating the face of a person, making him say things that he has not said. Such systems aim to improve Human Computer Interaction (HCI), revolutionise the cinema industry, create more realistic games and create better virtual classrooms for e-learning.

Probabilistic models are stochastic and generative models that can reason in the face of uncertainty. They provide a framework to unify a number of machine learning models and can deal well with noisy or missing data. They also provide an effective way to couple different streams of data with their generative properties.

This project aims to investigate the application of probabilistic models to the area of videorealistic speech animation. The two main models that would be used are: The Gaussian Process Latent Variable model (GP-LVM), to find a lower-dimensional manifold for both images and sounds; and Hidden Markov Models (HMM) to learn the mapping between these two data streams. Two variants of the HMM would be tested alongside with a non-probabilistic method and a comparison of these methods would be presented in terms of an empirical evaluation of the results obtained.