

## CHAPTER 6

### CONCLUSION

In this thesis, we have developed an economic and effective system for automatic 3D caricature model generation. By combining active appearance model (AAM), the extraction of the parameters for face components description has been refined. We have enhanced the detection and localization results as well as reduced the need for manual correction by end users. Based on the precise extraction results, the depth information is readily recovered for 3D model reconstruction. With the modified correlation-based approach, the computation can be carried out both quickly and accurately. In addition, a five-stage exaggeration strategy has been developed to improve the caricature generation. Aside from the comparison with average data, we also bring up the concept of inner relations between a subject's face components to make the exaggeration more visible. A conferred algorithm solves the incoherency caused by the previous method for collision detection. Finally, a 3D caricature face model is presented. By replacing various source images in the texture map generation stage, the model can be painted with different artist's drawing styles.

Because the judgment of artistic works is usually subjective, it is difficult to define criteria to evaluate these results. In this thesis, the emphasis will be on portability and affordability of the proposed system. On the other hand, even though users can integrate a pre-existing model to build a 3D head, it is still a complex procedure.

For future improvements, we hope to generate the back head automatically. Other head components, such as eyes, ears and tongue, should be integrated to produce a complete human head. Since we have maintained the extensibility with respect to MPEG-4 FDPs, it is possible to complete the whole FDPs and FAPs definitions for animation if more reference images are available.