

# Making FACES

## The Facial Animation, Construction and Editing System

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The human face is a fascinating, but extremely complex object; the research project described is concerned with the computer generation and animation of faces. However, the age old captivation with the face transforms into a major obstacle when creating synthetic faces. The face and head are the most visible attributes of a person. We master the skills of recognising faces and interpreting facial movement at a very early age. As a result, we are likely to notice the smallest deviation from our concept of how a face should appear and behave.

Computer animation in general, is often perceived to be ``wooden" and very ``rigid"; the aim is therefore to provide facilities for the generation of believable faces and convincing facial movement. The major issues addressed within the project concern the modelling of a large variety of faces and their animation. Computer modelling of arbitrary faces is an area that has received relatively little attention in comparison with the animation of faces. Another problem that has been considered is that of providing the user with adequate and effective control over the modelling and animation of the face. The Facial Animation, Construction and Editing System or FACES was conceived as a system for investigating these issues.

A promising approach is to look a little deeper than the surface of the skin. A three-layer anatomical model of the head, which incorporates bone, muscle, skin and surface features, has been developed. As well as serving as a foundation which integrates all the facilities available within FACES, the advantage of the model is that it allows differing strategies to be used for modelling and animation.

FACES is an interactive system, which helps with both the generation and animation of faces, while hiding the structural complexities of the face from the user. The software consists of four sub-systems; CONSTRUCT and MODIFY cater for modelling functionality, while ANIMATE allows animation sequences to be generated and RENDER provides for shading and motion evaluation.