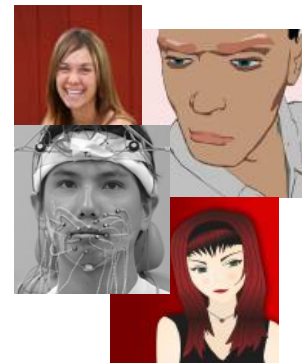


Research Directions

Office of Research Services

Building a Realistic Talking Head

Professor Denis Burnham, from MARCS Auditory Laboratories, and Dr Takaaki Kuratate, previously from ATR International, Japan, have received funding to develop realistic face animation in computer graphics. This Australian Research Council Discovery project will fund Dr Kuratate to take up a postdoctoral position at MARCS in July, 2006. The aim is to establish a database of types of face movements and shapes from children and older people from various ethnic backgrounds, and develop procedures for the synthesis of highly perceptible speech in talking heads.



'Creating realistic facial animation remains a major challenge for computer graphics designers' said Professor Burnham. 'This research combines what we know about the art and engineering of animation with speech perception research, in order to create an improved "talking head" that accurately conveys visual speech cues, and aids viewers' perception of what is being said'.

To achieve these goals, researchers will use the facial movements of children and adults from a wide range of ethnic backgrounds to enhance databases that are used to create graphic faces. Information from two such databases will be used: the Video Speech-Synchronized Face Motion (SSF-Motion) database using OPTOTRAK equipment already resident at MARCS, and the 3D Static Face Posture (3D-Static FP) database using a new face scanner to be purchased on the grant. Information will be integrated from these databases, and used to produce talking head speech in various test-beds. The quality and perceptibility of this synthesised speech will be evaluated by people's perception of the speech and naturalness of the talking heads, and the extent to which they match real human speakers' faces and speech.

The outcomes will be useful in many ways. The research will create an adaptable face-animation interface, allowing the user to change key dimensions of the head that is being created such as, age, gender or ethnicity. The new technology will allow the development of plug-in graphics software that can synchronize face motion with speech from a database of different face models. The increased dynamic realism of the advanced technology will also be useful in assisting forensic scientists and police in finding missing persons.

Project Title: *Building a Talking Head via Dynamic & 3D-Static, and Age-& Ethnically-Varied Databases: Perceptibility and Acceptability.*

Funding has been set at: \$275,000.

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