INTEGRATED MEDIA SYSTEMS CENTER
A National Science Foundation Engineering Research Center at the
UNIVERSITY OF SOUTHERN CALIFORNIA

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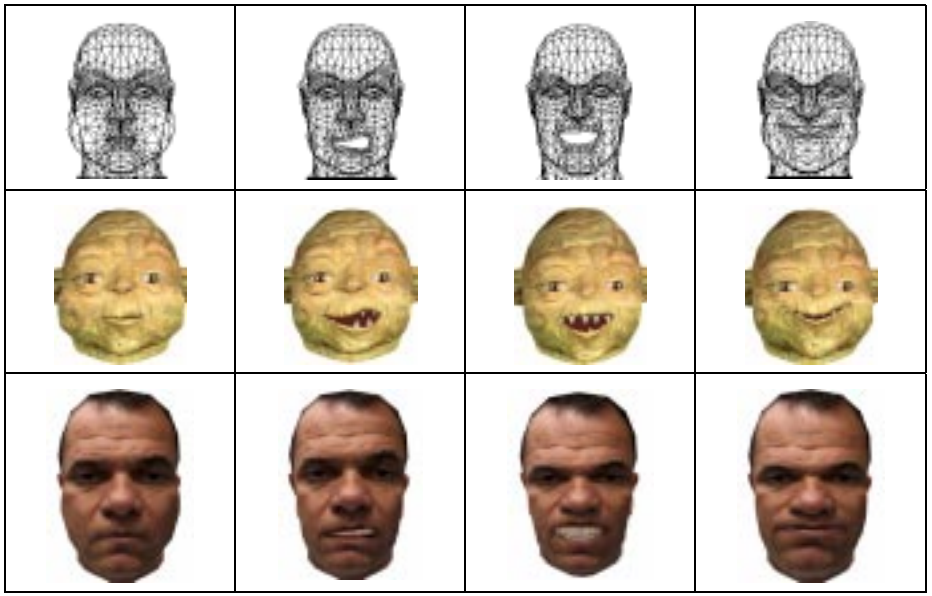
EXPRESSION CLONING



Expression Cloning discovers correspondences between points on faces of differing topologies. Once such correspondences are established, an animated facial performance from one model (top row) can be transferred to different facial models (bottom rows).

USC STUDENTS, DEGREES

Jun-Yong Noh (Ph.D.)

BRIEF DESCRIPTION OF DEMONSTRATION

Expression Cloning adapts animated facial expressions to different computer face models, allowing reuse of manually created animation with characters of different proportions. In the arena of virtual presence, expression cloning allows freedom in the choice of an avatar. This is desirable both for expressive purposes (e.g. in gaming) and when anonymity is desired (as when dealing with sales people or other strangers in virtual spaces). Expression cloning is part of a general IMSC effort towards expressive human interaction in virtual and augmented reality environments.

UNIQUE OR DISTINGUISHING CHARACTERISTICS RELATIVE TO STATE-OF-THE-ART

. While facial expression is the focus of many investigators at present, Expression Cloning is currently unique in its focus on retargeting existing facial performances to new models.

APPLICATIONS	RECENT HIGHLIGHTS, LEVEL OF DEVELOPMENT, UPCOMING MILESTONES
Expression cloning can be applied to both avatars (real-time virtual presence) and traditional computer animated characters.	. The range of allowable representations of expression has recently been generalized to include abstract representations such as a trajectory in "emotion space." Current work includes exploration of an expression cloning approach to texture.

UNDERLYING TECHNOLOGIES

- The Expression Cloning system consists of 36,000 lines of C++ programs on the Windows platform.

LIST OF PUBLICATIONS, REFERENCES, URLs

- J.-Y. Noh and U. Neumann, Expression Cloning, *ACM SIGGRAPH* 2001.
- J.-Y. Noh, D. Fidaleo, U. Neumann, Emotion Driven Facial Animation, IMSC/CGIT Tech Report, 2002.
- J.-Y. Noh, U. Neumann. Talking Faces, *IEEE International Conference on Multimedia and Expo 2000,* August 2000.
- J.-Y. Noh, D. Fidaleo, and U. Neumann, "Animated Deformations with Radial Basis Functions," *ACM Symposium on Virtual Reality Software and Technology (VRST 2000),* pp. 166-174, October 2000.
- http://graphics.usc.edu/cgit/ (lab web page)

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