Background
- Company founded in 2000 by computer vision PhDs
- Leaders in facial performance analysis and character animation
- Single-camera unconstrained capture environments
- Technology developed for professional market
  - High-end computer games and movies
- More recently, transition to Consumer Market
  - Desktop PCs and Mobiles
  - Cameras have become ubiquitous

Challenges
Adapting our technology for consumer platforms
- Fully automated performance capture and animation
- Track wide variety of faces
  - gender; ethnicity; glasses;
- Unconstrained environments
  - poor and varying lighting conditions; camera shake
- Processor limitations
  - budget desktop and mobile architectures

Calibration
There are published methods for building trackers specialised for a single individual or a limited range of expressions. But creating a tracker able to track a large variety of people and a wide range of expressions is challenging. Our approach is to combine the strengths of two generic trackers to provide a specialised, user-specific expression tracker.

Run-Time System
Capture → Lighting Normalisation → Track → Expression Analysis → Animate
Per-frame pre-processing removes lighting artefacts.

Expression analysed and interpreted as animation controls for a 3D avatar.

All achieved at 30 frames per second for user interaction

Products and Applications
Live Driver™ Software
Development Kit available under commercial and academic licenses. Used by Sony Online Entertainment within EverQuestII to replicate gamers’ expressions on their avatar.

Mojo Masks available on the Apple App Store. Facial performance capture and animation used to overlay masks on the user’s face.

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