Overview

Traditionally, enjoying a portrait art, e.g. the Mona Lisa, is a passive activity. The spectator merely views the painting and admires the brush strokes, composition, etc. But now, with real-time computer vision and graphics algorithms, we can inject interactivity into portrait art, thereby bringing these art works back to life and giving a new dimension to art enjoyment. In our art installation, a spectator is allowed to animate the face in a portrait art work to produce any expression she/he likes.

Techniques

- Face detection and localization: CMU face detector plus face AAM (Active Appearance Models).
- Facial motion tracking: optical flow (Lucas-Kanade algorithm) plus affine transformation constraint.
- Avatar generation: Delaunay triangulation plus texture mapping.
- Animation: 2D motion flow retargeting.

Benefits

- Automatic, markerless face tracking of both the avatar and actor’s face.
- Real-time motion tracking and retargeting at 15fps on a 1.8GHz CPU, with 1GB RAM, and a webcam.
- Convenient exporting of motion data into Maya format.
- Engaging and enjoyable art form.

Results