Four Eyes Lab Open House

October 24, 2003, 2-5pm

http://ilab.cs.ucsb.edu

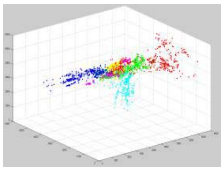
In the Four Eyes Lab our research focus is on the "four **I**'s" of Imaging, Interaction, and Innovative Interfaces. The lab is directed by Profs. Matthew Turk and Tobias Hollerer, and includes several graduate and undergraduate students, postdocs and visitors.

List of Presented Projects and Presenters:

Placement of Object Annotations in Video-Based Augmented Reality

Vineet Thanedar

Augmented reality involves supplementing our view of the real world with virtual or computer-generated information. Annotating objects aids our understanding of the scene in view. However, inefficient, sub-optimal placement of these annotations can lead to problems, such as occlusion of other important objects, visual clutter, or loss of annotation coherency. In this project, we attempt to solve the problem of placement of annotations in a video-based augmented reality setup so as to avoid the problems mentioned above.



Probabilistic Expression Recognition on Manifolds

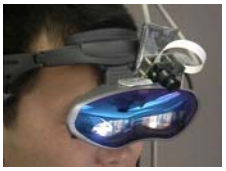
Ya Chang, Changbo Hu

We present a probabilistic video-to-video facial expression recognition based on manifold of facial expression. The manifold of facial expression is embedded in high dimensional image space. In the embedded space, images with different expressions can be clustered and classified by the probabilistic model learned on the manifold of expression.

Campus Modeling and Visualization

Lihua Lin

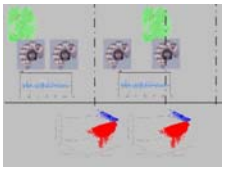
We construct a 3D campus model for information visualization by integrating the Maya 3D models (or other 3D models which can be converted into VRML model) with CAD drawings. Elevation information is used to model the actual ground.



Hand Gesture Input for Battuta

Mathias Kolsch

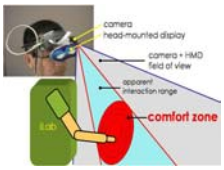
Project Battuta investigates the potential of emerging technologies to bring new functionalities to mobile field data collection. We research novel user interfaces for wearable computing environments, in particular vision-based hand gesture input. A head-mounted display (HMD) provides a screen for data output, and a head-mounted camera (HMC) allows for data input via hand gestures, performed in front of the body of the HMC's wearer.



Temporal Integration for Continuous Multimodal Biometrics

Alphan Altinok

Once authenticated, should a user have universal access to resources for the complete session? What if an unauthorized user takes over the session? We attempt to achieve continuity in biometrics decision making by temporal integration based on propagating uncertainty.



Postural Comfort

Mathias Kolsch

While human factors research gives advice on the range in which humans can operate without experiencing musculoskeletal strain, fatigue or discomfort, no objective measure for "comfort" is known. In this project, we defined a measurable foundation for comfort. Our work suggests that human-computer interfaces should be designed within the limits of a comfort zone. We also conducted a user study that serves as an example for how to design studies for comfort evaluation.

ARWin – A Desktop Augmented Reality Window Manager

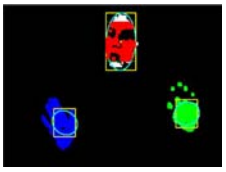
Stephen DiVerdi

The goal of the ARWin project is to develop an augmented reality office desktop environment. The basic ARWin system allows for execution of traditionally desktop applications in an augmented reality environment, and provides a testbed for exploring novel application and user interfaces that take advantage of the extended 3D workspace.

Face Detection, Alignment and Tracking for Real-Time Visual Interaction

Changbo Hu, Rogerio Feris

We describe a real-time system for detecting, aligning and tracking human faces. This is an attempt to make machines aware of people in order to improve human computer interfaces.



Face and Hand Tracking with Skin Color Segmentation

Haiying Guan

In this project, based on the results of skin color segmentation, a person's face and hands are detected and tracked by the clustering technique. The user can control a visualization of a cylinder (size, shape, rotation) by movements of the face and hands. The project is also a partial work for a collaborative project with Media Arts and Technology: Interface Device for Interactive Initialization.

Computer Vision based Two Handed Gesture Recognition System

Ryan Garver

This system uses a stereo camera and the TLib image processing library to track a user's hands. With this tracking, mouse pointing and clicking is possible. Future plans include a HMM based open arm gesture recognition system working along side with the mouse pointing capabilities.

A Non-Photorealistic Camera: Detecting Silhouettes with Multi-Flash

Rogerio Feris

We describe a non-photorealistic camera ('NPR camera') that robustly captures shape edge information in real scenes. A fixed camera captures the scene under one flash at a time and we exploit the resulting shadows to classify the scene edges. We synthesize new stylized images by highlighting or de-emphasizing the detected edges.

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