

## Computational Perception Laboratory

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The Computational Perception Laboratory (CPL) was founded in 1995 to explore and develop the next generation of intelligent machines, interfaces, and environments for modeling, perceiving, recognizing, and interacting with humans. We study the interplay between vision, graphics, audio, and machine learning and train researchers to operate at the frontiers of these disparate fields. As part of the Graphics, Visualization and Usability (GVU) Center, we interact closely with faculty in HCI, graphics, and robotics. Research facilities include the Aware Home and a Vicon motion capture studio. Projects include:

### Modeling and Recognizing Human Motion

We are interested in learning motion models for figures and faces, using both commercial and video-based motion capture. We will use these models to characterize gait and style, and to recognize actions.

### Animation from Video

We are developing techniques for synthesizing novel video sequences of dynamic scenes and controlling animated characters. Examples include video textures and controllable synthesis from learned motion models.

### Robust Tracking of People in Video

We are developing reliable techniques for tracking people in unconstrained monocular video using learned models of appearance and motion.

### Visual and Audio Perception for Interactive Environments

Interactive environments define unique perception problems for understanding activity of users. We are developing optimal techniques for combining distributed audio-visual measurements and interpreting them. The Aware Home is currently our primary investigative environment.

### Collaborative Urban Mapping by Robots

We are developing automatic techniques for building 3-D models of urban environments, using imagery obtained by a fleet of autonomous robots.

### Perceptive Wearables

We are developing wearable computing systems with ability to sense their users and their environment. A pendant which recognizes hand gestures and a mobile sign language recognizer are two recent examples.

### Projected Light Displays

Using multiple projectors and cameras, we are exploring the generation of stable, occlusion-free virtual displays on arbitrary surfaces.

*Interested students should apply to the College of Computing.*

*Postdoctoral and Research Scientist positions are also available.*

*<http://www.cc.gatech.edu/cpl>*

