Canopy Climb

Project Members:
Win Burleson, Ted Selker

Project Description:
The Canopy Climb will be first installed as an exhibit in a science museum. The rainforest ecosystem is highly dependent on the trees that grow there. This exhibit will allow visitors to experience this aspect of interdependence through realistic exploration of rainforest trees and the life they support. A small patch of vegetation is projected onto a large screen while a set of ropes is dangled from the ceiling. Pulling on the ropes in one direction will allow the visitor to ~climb~ the tree while pulling in the other direction ~descend~ the tree. At the base of these ropes is a log which the visitor can climb on. Stepping on this log will display more information about the item in the centre of the screen while stepping off the log will let the visitor continue exploring the rainforest.

Publications:

More about this project

Chameleon Mug

Project Members:
Ted Selker

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Project Description:
The Chameleon Mug investigates a way of making handheld computers for the kitchen. Using LCD, bimetal strips, thermoresister and Thermochromic ink as sensors; we developed a vessel which changes color, displays safety messages and/or springs a handle to demonstrate whether the fluid in it is hot or cold. While initial reasons for this research were to explore the safety and aesthetic issues of making a tumbler which could turn into a mug for hot drinks, our researchers have uncovered many more uses for sensors in a drinking vessel. For example, to detect the concentration of sugar or lactose in a beverage, warn of bad milk or to mix the fluid ultrasonically.

Chameleon Tables

Project Members:
Ernesto Arroyo, Ted Selker

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Project Description:
These experimental tables are designed to be useful as an individual sized table or to be connected together mechanically and electronically tocreate a larger surface. The 2 foot hexagonal shape has a heavy, 3-inch-thick cavity under its clear top, allowing it to function as a display case or electronic table infracstructure. The gas charged support post includes a capacitive sensor that measures height and weight of the table top and allows the table to articulate up and down by approximately 2 feet. There are currently two scenarios for this project: "The Drum Table" - One can play the Capacative Leg as a timpani when it is raised to its full height, as a tom tom when it is at mid-height, and as a bongo when the table is at its lowest. "The Conversation Table" - This version uses the

Capacative Leg to show coffee table book pictures when at coffee table height, desk work when at mid-height, and bar games when the table is at its full height.

Cheese

Project Members:
Andrea Lockerd, Florian Mueller

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Project Description:
Conventional web interfaces respond to and consider only mouse clicks when defining a user model. We have extended this and take into account all mouse movements on a page as an additional layer of information for inferring user interest. We have developed a straightforward way to record all mouse movements on a page, and conducted a user study to analyze and investigate mouse behavior trends. We found certain mouse behaviors, common across many users, which are useful for content providers in increasing the effectiveness of their interface design.

Dice

Project Members:
Win Burleson, Ted Selker

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DriftCatcher

Project Members:
Andrea Lockerd, Ted Selker

Project Description:
Email is a tool that people use daily, making an implicit statement about their relationships with other people, and providing an opportunity for a computer to learn about their social network. While people have come to depend on email in their daily lives, the tool has hardly changed to help people deal with an overwhelming amount of information. Many of the social cues that allow people to function naturally within their social network are not inherent or obvious in Computer Mediated Communication (CMC). This work uses automatic social network analysis to bring these cues to CMC and foster the user's coherent understanding of the people and resources of their communication network. The goal of this work is to demonstrate that Artificial Intelligence can help people in the realm of social decisions. Using AI of Social Networks, this work improves human-human communication, recognizing the social characteristics of human relations in order to achieve a more natural online communication interface.

Excerbike

Project Members:
Win Burleson, Ted Selker

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Project Description:
Drowsy drivers are a danger to themselves and others on the road. Additionally for many commuters it is hard to get ample time to exercise during the week since commute time eats away at personal time. The ExcerCar project is an effort to enhance both alertness and physical activity. We are developing an exercise interface to the vehicle that counter acts the effects of fatigue and inactivity while driving. The hypothesis is that exercise will mitigate the effects of fatigue and increase a drowsy drivers alertness. Put another way, Can Flinstones car make him a more alert driver?

Eye Are

Project Members:
Ted Selker, Taly Sharon, Jean Bertho Alonord, Nitzan Gadish,

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Project Description:
In the Context Aware Computing Group at the MIT Media Lab we have developed a
system, Eye-aRe, designed to detect and communicate the intentional information
conveyed in eye movement. This glasses-mounted, wireless device stores and transfers
information based on user eye motion and external Infrared (IR) devices thus promoting
an enriched experience with the environment. Gaze Detection: In the primary scenario,
eye motion detection is used to recognize a users gaze. When the persons eyes are fixated
the system infers that they are paying attention to something in their environment and
then tries to facilitate an exchange of information in either direction on the users behalf.
We currently have two demos that utilize the gaze detection mode. In the first case, we
have a base station PC that waits to hear from Eye_aRe glasses. The base station is
designed to work with a number of glasses in a party scenario. In this party, everyone
wears Eye_aRe glasses and as they move around the party their glasses exchange
information with other glasses (who you are talking to, how long the conversation lasts).
When a person steps up to the base station, the base station prompts the glasses to
download the information it has gathered and stores this in a database for the user. Then
the user can access this information and open webpages of people they talked with or
send a quick email. The second demo, illustrates the implict nature of the glasses input.
The user wears the glasses, which transmit IR when gaze is detected. A toy dog has been
equipped with an IR reciever, which triggers activity (barking and walking) when it
recieves information from a pair of glasses. Blink Detection A second scenario with these
glasses is blink detection. We now have software that determines when the user blinks.
We are currently working with this in order to detect important information about the
users cognitive load. A number of things can be inferred from blink rate, namely stress

level and fatigue. We plan to conduct a user study in which we will show that these glasses can reliably infer cognitive load of the user.

Flexor

Project Members:
Win Burleson, Ted Selker

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Project Description:
An arm sleeve senses arm movement and uses models of arm motion to create entertaining and useful feedback for physical therapy or exercise. Simply moving your arm around creates an electroluminescent light show. When the motion is that of a weight-lifting bicep curl, it counts lifts. This function encourages body awareness and expression. A sleeve integrating a variable resistor senses body position while an on-board microprosessor facilitates interaction through electroluminescence and sound. Physical Therapy is coupled with self-awareness, range of motion, curculation, programmable exercise, encouraging feedback, and a progress report. Therapy may also be coupled with expression, communication and performance, play and personal signatures, jewelry and tools.

Floor

Project Members:
Ted Selker, Jorge Martinez, Greg Walker, Kevin Weston

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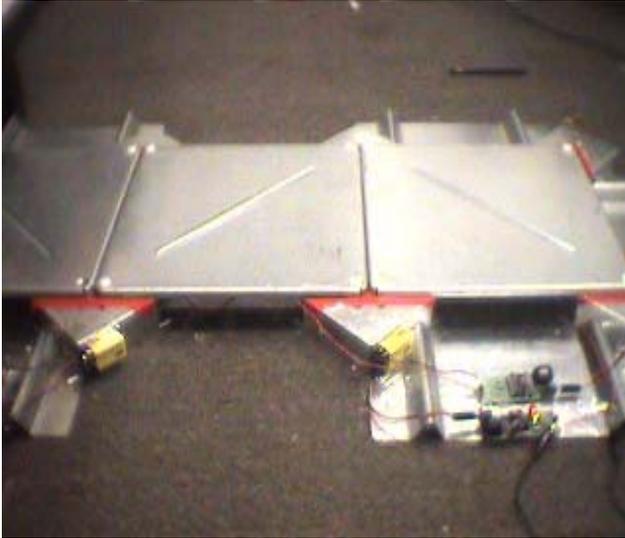
Project Description:
The Social Floor is an intiative which introduces computing to the floor. We have worked with special flooring from Steelcase to create an inexpensive system of floor sensors (third generation) which can sense where a person is and where they have been within a room. The floor sensors next to the bed detect when someone is standing near the bed, and will play an audio introduction for it. If the person remains for a while, additional audio and video descriptions will activate. Current and future experiments include: triggering an appliance to teach a skill; recall a previous activity by that person (i.e. retracing steps); and encouraging people to circulate to another group in a party social floor.

Gesture Ball

Project Members:
Ted Selker

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Project Description:
The Gesture Ball explores the area of human-computer interaction by implementing a system wherein the human user will be able to use a gesture-based interface to play music. The Gesture Ball will learn the users mental model of how such an interface should work, and modify itself to meet those expectations.

Haptic Music Interface

Project Members:
David Merrill, Ted Selker

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Intelligent Spoon

Project Members:
Connie Cheng, Ted Selker

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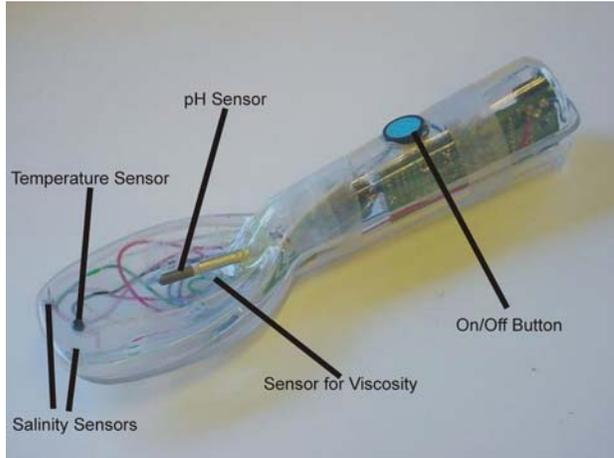
Project Description:
This project aims to introduce computing into traditional culinary utensils. It seeks to provide information, in an integrated manner, about any food the spoon is in contact with, and to offer suggestions to improve the food. The spoon is equipped with sensors that measure temperature, acidity, salinity, and viscosity, and is connected to a computer via a cable. The sensors evaluate the different properties of the food, and send them to the computer for further processing. Apart from consolidating measurements that are normally done by an array of equipments into a single spoon, the information obtained can be used to advise the users what their next step should be; for example, it tells the user if there is not enough salt in the brine prepared to make pickles.

Interruptions

Project Members:
Ernesto Arroyo, Ted Selker

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Project Description:
Disruption is an important issue in the design of self-adaptive interfaces. This project attempts to make a computer intelligent enough to select the appropriate sensorial modality based on the users preferred perceptual channel. This project investigates which modality is the most efficient and at the same time, the least disruptive. Two interruption modalities are studied: heat and light. This research adds to previous research by showing there is an effect on performance caused by interruption modalities: for example, thermal modality produced a larger decrease in performance than visual modality; this modality has a greater disruptive effect on interrupted tasks than light. Disruptiveness and performance measures agree that heat causes more of a detrimental effect than light when used as an interruption.

InVision

Project Members:
Mike Li, Ted Selker
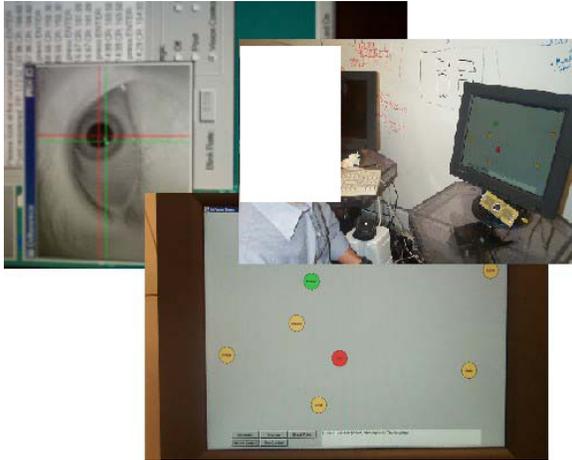
Project Description:
The physical patterns of eye movement tell a social story of interest and intent. This research demonstrates how a persons visual pattern on a computer screen can identify his or her task or question. As a user glances around, Invision will group an image by using a special structured light-based eye tracking system (courtesy of IBM USER)

Jukebox

Project Members:
Jessica Scott, Ted Selker, Win Burleson, Andrea Lockerd

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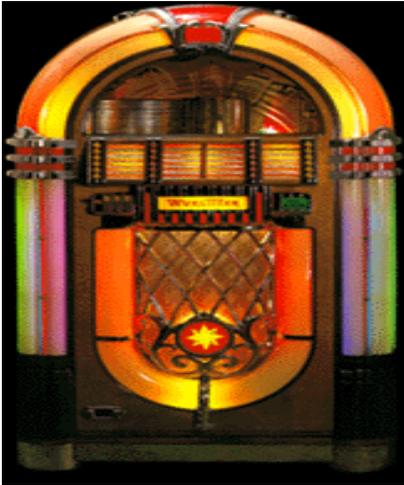
Project Description:
The Jukebox is a multi-agent which replaces direct manipulation to act as your personal DJ. It uses 6 voting agents to assess what kind of listener you are, and what is appropriate to promote for you to listen to. It builds a model of its listeners and selects music based on past performances. A user model is created by looking at a history of responses. A positive response is generated by dropping a coin into the jukebox, and a negative response can be given by a kick.

Media Helmet

Project Members:
Ted Selker, Jerimy Arnold

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Project Description:
Walters Helmet is a bike helmet project. The project seeks to establish mediated information between the bicyclist and the world without distraction. As a hands-free interface, the helmet will listen to the audio, imagery, and motion of the environment. The bicyclists past encounters with pot holes, etc are used to remind with audio as they are approached. The bicyclist can nod to turn on turn blinkers, and use voice commands to activate a horn. The helmet can also make phone calls take dictation, play music and other information. The helmet is designed to intrude slightly with unusual external information; for example, it will tell you when a car is approaching.

Media Windshield

Project Members:
Ernesto Arroyo, Ted Selker, Sonya Huang

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Project Description:
The Media Windshield is a demonstration that changes the use of an automobile windshield to serve multiple purposes. The Windshield adapts to the users of the car and their activities using sensors in the seats and ignition. When no one is in the car, it can present information to the outside world: advertising, augmentation of the road signs, even personalized information for a party that is walking by. When the driver gets into the car, it adjusts the audio to be appropriate for their seating arrangement and puts up an Internet interface. And Finally, when the car is driven, the windshield provides a display with context-aware information and services, highlighting signs, obstacles, pedestrians, and alerting the driver to points of interest and future destinations.

MrWeb

Project Members:
Andrea Lockerd, Taly Sharon, Huy Pham, Ted Selker

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Project Description:
This project explores how a group web space can become more dynamic and useful, rather than a static display of finished projects. We have given our web server its own identity, MrWeb. MrWeb is designed to act as another member of the group whose job is to display, coordinate, organize, and facilitate the way the group interacts. This system is exploring how people can interact with the webserver in a natural way, using email as a means of communication. Users are able to specify changes and additions to the web page by sending email to mrweb@media, additionally MrWeb will initiate an email to request information.

Multimedia Bed

Project Members:
Win Burleson, Ted Selker

Project Description:
What can a computer do with the rest of your time? A multimedia bed provides contextually appropriate reactions such as: waking you with images of the sun coming up over the hills; reading; entertainment; gesture recognition, and postural correction and awareness.

Necklace

Project Members:
Jorge Martinez, Ted Selker

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Project Description:
A sequence of digitally enhanced beads offers something to fiddle with, something to share with others, and something to entertain. The Necklace integrates light, sound, motion, and massage.

Talking Couch

Project Members:
Ted Selker

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Talking Trivet

Project Members:
Ernesto Arroyo, Ted Selker

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Project Description:
This project includes an understanding of oven cooking practices in an oven mitt by designing it to remark verbally on its temperature. The Talking Trivet uses a thermoresistor to remark on the temperature of foods and containers which are placed on it. For example, it exclaims when left on a surface ove 600 degrees, informs you that the food or affirms that the food is . In addition, it sets an automatic timer for cooking which is based on the temperature of the oven. Therefore, a 275 degree oven exclaims that the food should be checked in 40 minutes, whiles a 500 degree oven recommends that it should be tested in 10 minutes.

Threshold

Project Members:
Ted Selker, Jon Jackson

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Project Description:
Whether you are sticking your head in for a quick chat, walking by to see if someone is there, or entering for a meeting, the threshold is one of the most important places in a social relaitonship. Sensors and voice recognition in and outside the digitally-enhanced threshold indicate the approach and identity of a collleague. Threshold facilitates meeting size, scheduling, and rescheduling.

Wireless Power

Project Members:
Jorge Martinez, Ted Selker, Bob Kelly, Ernesto Arroyo
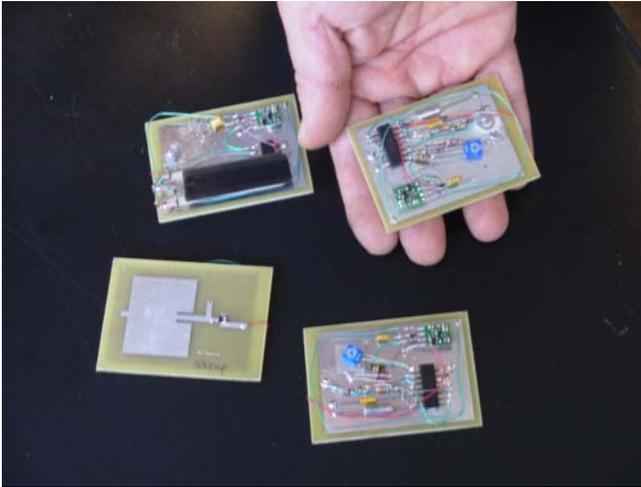
Project Description:
This work is a collaboration between Lear corporation and the MIT Media Lab. We have adapted the masters thesis of Jorge Martinez, on wireless transmission of power, for the car. The 1 watt 802.11b power source allows transmission of up to 1 milliwatt 2 meters. Receiving rectennas integrate the power harvesting diode/ capacitor pair. A low power identity circuit allows a particular receiving module to have a particular address. A low power transmitter allows switch closure, or sensed information to be transmitted to a receiver. The audio channel in a laptop interprets the meaning of the transmission. One such sensor that is being used is carbon on a moisture absorbing plastic for moisture detection in car.