

GESTURE-BASED INTERFACE RESEARCH

Ben Bogart and Many Ayromlou of the Rogers Communications Centre, are currently working on a research project that involves a new type of interface. This one is a leap beyond the keyboard/mouse interface we are accustomed to. The project would potentially give the user control over any kind of hardware and software as well as any kind of audio and visual media using simple motion capture. For instance, it would allow the user to manipulate hardware or software with mere body movements (such as hand gestures) allowing anything from adjustments in audio levels to controlling a robotic arm.

The software being used to develop this project is known as MAX (a Mac based, programming language and signal decoder) as well as SoftVNS (a plug-in for MAX that is able to capture motion). According to Bogart and Ayromlou, the possibilities are endless. Theoretically, one will be able to play a video game without a

joystick, manipulate settings on a TV without a remote control, interact with a computer without a mouse or keyboard, and direct a robot arm from miles away.

Since the project began, Mr. Bogart has steadily been experimenting with new hardware and software in an attempt to push the boundaries of gesture-based interface. For instance, he now has more than one Mac G4 at his disposal, which has made the research process far more efficient. One Mac is attached to a camera that is solely used to track motion on an X and Y grid, it interprets that signal and then sends it to the second Mac. The second Mac is attached to three separate cameras. These cameras are used to capture live video signals. As the gestures

saturation and aspect ratio of a QuickTime display.

Other input methods besides motion tracking are also being explored. One such method involves the use of proximity sensors, which can sense how close a person's arm is to the computer. This information can then be interpreted and used to control another application or parameter of the software. Muscle flexion is another potential method. By attaching special sensors to a person's arm, a user can manipulate software by flexing or adding tension in their muscles. According to Bogart, theoretically they can map any kind of software application/parameter to any number of input devices and create an interface that is far more instinctual.

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are being captured and interpreted by the first Mac, one is able to control the video signals being viewed by the second Mac and manipulate them. So in effect, one is able to use gestures to manipulate a live video stream. By utilizing simple hand gestures, one is able to control how three separate video signals on the second Mac are mixed.

Max is the software that makes it possible to manipulate the video signals being received on the second Mac. According to Bogart, it allows him to assign a variety of variables to the second Mac and to control different parameters of its video editing capabilities. By assigning the tracking signal different parameters one can affect the tilting, panning, video gain, colour



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