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New Horizons for Multihandicapped Youths:

NEW TECHNOLOGY DEVELOPED AT BOSTON COLLEGE ALLOWS SEVERELY DISABLED STUDENTS TO "FINGER PAINT" VIA EYE MOVEMENT

CHESTNUT HILL, MA (10-20-94) — Through new computer technology created by a team of Boston College researchers, students at the university’s Campus School for multihandicapped and developmentally disabled individuals can now interact with computers, using only their eyes.

In recent months, the students—some of whom are unable to move up to 98 percent of their bodies—have been eye painting, a technique similar to finger painting. Via technology developed at the university, the students are able to move their eyes around a computer screen and have colors appear wherever they look.

The innovation is an outgrowth of the “EagleEyes” Project—a collaboration between BC Carroll School of Management Computer Science associate professors James Gips and Peter Olivieri, and BC Psychology Professor Joseph Tecce—which was selected as a finalist in this year’s Discover Awards for Technological Innovation. The computer control system links users to the computer via a series of electrodes attached around the eyes, which allow the cursor to move in response to eye and head movement.

Similarly, eye painting allows severely disabled youths to “finger paint” by moving their eyes, Gips explains. The computer monitors their eye movements by reading signals from electrodes placed around their eyes. The computer “paints” the screen where the users direct their eyes. Finished paintings—color printouts of the screen—are displayed at the Campus School and also brought home to parents.

“It’s still in the experimental phase,” Gips says, “but the kids are enjoying it because it gives them control over their environment.” The researchers hope software for reading, writing and arithmetic—as well as for a new, visually presented IQ test for the severely handicapped—can be developed.

“This technology is changing the way people interact with machines and we plan to improve and add to it,” Olivieri says. Future “EagleEyes” possibilities include navigating large data bases for business applications and customizing lessons for students, he notes.

“We’re asking a lot of people to use their eyes in a way they’ve never done before,” adds Tecce. “Eyes traditionally bring information into the brain. We’ve reversed that, with eyes being used to control the environment, rather than reacting passively. Clinical populations is where we’re going with this and we’re hoping this gives [Campus School students] a little more quality of life,” Tecce. Ninety-five percent of the Campus School population—which includes students ages three to 21—are confined to wheelchairs.

“The potential is awesome,” according to Campus School Director Philip DiMattia. “Our children have severe sensory damage and disabilities, but we know they take in information because of the way they communicate with their eyes. This project is a first because their eyes, for the most part, are not disabled.”

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[FOR MORE INFORMATION—OR TO ARRANGE A DEMONSTRATION—CONTACT PROF. GIPS AT (617) 552-3981.]