An eye on the future

Resident honored after developing a computer that the eye can control

By SUSAN BARBIERO

In an age when technological advances seem to spring up every few minutes, James Gips, a Medfield resident and associate professor of computer science at Boston College, may have invented an advance with a uniquely humanistic view.

Working with two colleagues, Associate Professor of Computer Science Peter Olivieri and Associate Professor of Psychology Joseph Tecce, Gips has developed a new method of human interface with computers — face-to-face and electrode-to-mother board.

Eagle Eyes, as the project is named (the eagle is the mascot of Boston College), allows the computer's user to work the keyboard with only their eyes, via electrodes placed around the eyes that monitor the direction of eye movements. Such direct, touchless interaction and control has immediate ramifications, of which the most exciting may well be the resulting accessibility of the computer world to the severely disabled.

While other methods of interacting with a computer without a mouse or keyboard have been explored, Eagle Eyes comes closest to having thinking take control. This is the reason Gips and his colleagues have been singled out for a remarkable distinction — they have been named finalists in the 1994 Discover Awards for Technological Innovation.

Founded five years ago "to recognize the men and women whose creative genius improves the quality of everyday life," the Discover Awards are sponsored by Discover Magazine, which is owned by Disney. This year, there were over 4,000 applicants for the awards, from which 35 finalists, five in each of seven categories, were selected. The categories are Automotive and Transportation, Aviation and Aerospace, Computer Hardware and Electronics (Gips' category), Computer Science, Environment, Sight, and Sound.

In his category, Gips faces some impressive competition. Some of the major players in computer hardware are represented as well, among them Intel Corp. and Jet Propulsion Laboratory. On Aug. 20, at an event at Disney's Epcot Center in Florida, the winner in each category will be announced. The event will be taped and broadcast on the Disney Channel on Aug. 25 at 8 p.m.

For Gips and his colleagues at BC, Aug. 25 will be the culmination of two years of intense development. Working with a dedicated team of three undergraduates, the professors spent virtually all their free time working on Eagle Eyes.

Using Macintosh hardware, the team has developed four distinct applications: an alphabet grid for communicating; a painting program; an application that allows the viewer to select from four separate video clips; and, an application that enables the viewer to play just about any standard video game.

The common thread that ties all the applications together is that the eye replaces the mouse. For the severely disabled, this breakthrough brings the world of the computer to life.

This summer, to pursue this application of the system, Gips brought the computer system to the members of BC's Summer Camp program. Summer Camp welcomes severely disabled young people to the Boston College campus, where they receive therapy and summer fun. The young people who experimented with Eagle Eyes had their own eyes opened to a whole new world.

"The kids were all over it," said Gips. "For someone who cannot use their hands or speak this system empowers them to interface with the computer."

And for Gips, Eagle Eyes constitutes a very exciting and rewarding runner up to the ultimate research project — controlling the computer with your thoughts. Eagle Eyes bring the world of technology closer to that possibility.

Gips has taught at Boston College for 18 years.

He was an undergraduate at Massachusetts Institute of Technology and holds a doctorate in computer science from Stanford University. He has lived in Medfield for 17 years with his wife Pat. They have two children, Jonathan, 14, and Amy, 12.

Whether Gips and his colleagues are singled out as the winner of their category, no one can deny that their project has opened the door to the final step toward mind control of computer systems. And, in the process it has opened the computer world to a whole array of possible applications and users to whom the door had previously been shut.