Robot Mice Draw Crowds, TV Coverage at NCC

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The first time trial of the IEEE Spectrum/Computer Amazing MicroMouse Maze Contest brought large audiences and CBS affiliate KNXT of Los Angeles to the IEEE booth at the NCC's Personal Computing Festival.

Six mice actually attempted to run IEEE's maze, but only two successfully found their way through it. However, contest manager (and emcee) Roger Allan noted that he has received word of over 50 additional mice in various stages of completion, many of which he expects to run at trials at conventions later this year.

Contest rules stipulate that the mouse must be completely self-contained—no external controls or power supplies are permitted. The robot must run the maze in five minutes or less, with three attempts allowed.

The fastest micromouse at NCC was the "Moonlight Special," built by Art Boland, Ron Dilbeck, Phil Stover, Roy Kelly, Tim Harrington, and Jim Thomas, all of the Battelle Pacific Northwest Laboratories in Richland, Washington. Their design, which ran the maze in an official time of 51.4 seconds, employed a Z-80 microprocessor and utilized infrared optical sensors to locate itself within the maze.

The three-pound winner operates in three modes—learning, exploring, and optimizing, thereby exploiting the three runs permitted under the rules of the contest. In the learning mode the mouse simply finds a path through the maze as best it can, remembering where it has been. In the exploring mode it seeks out those parts of the maze it knows it did not visit during the learning mode run, and stores that added information. Finally, in the optimizing mode, it chooses the most direct route based on the knowledge of the maze it gained during the first two runs. In winning the NCC trials, however, the Moonlight Special's infrared sensors were confused by heat from the booth's overhead lights and from the lamps of the CBS videotaping crew. This problem prevented the mouse from completing all but one winning run. On the last day of the Personal Computing Festival, however, the Moonlight Special turned in an unofficial time of 40 seconds in a demonstration run. This fast time resulted from the installation of a protective hood over the sensors (and turning off the overhead lights), which enabled the mouse to utilize all three modes to produce an optimal run.

Dilbeck estimated that he and his colleagues spent approximately 500 off-work man-hours (hence "Moonlight Special") and $150-$300 in building their winning entry.

The second mouse to successfully run the maze was another Z-80 based design by James Hamblen of Martin Marietta in Denver, Colorado. Recording a time of 4 minutes, 32.48 seconds, this design utilized a combination pressure-sensing/ optical system.

For their efforts the Battelle group received a RCA Cosmos VIP video interface kit and, of course, a chance for the top prize of $1000. Runner-up Hamblen won an Atari TVS video computer system.

In addition to Roger Allan's organizational talent, the contest received considerable support from a number of firms. Tektronix provided equipment and the technical expertise of David Ulmer, who designed the timing and measuring system and the contestant data file. John Fluke Manufacturing contributed two high-precision counters for measuring official times, and Conrac made two 23-inch monitors available for displaying contest and contestant data. Additional support came from Texas Instruments, Motorola, Panasonic, Jensen Tools, Gould, Atari, RCA, National Semiconductor, GE, Gates, and Semiconductor Specialists.

The next trials will be held at Personal Computing '78, Philadelphia Civic Center, August 24-27, where many more contestants are expected. For further information about the contest contact Roger Allan, IEEE Spectrum, 345 East 47th Street, New York, NY 10017.