

Engineering pros woo America's youth

Manchester, NH—The clock winds down on the final four and the crowd goes wild. Fans stamp their feet and roar as the winners trade high-fives and bear hugs.

It's not the NCAA. It's called the "Maize Craze," a design competition that brings teams of engineers together with teen-agers.

The object was trivial: Have small robots collect as many tennis balls as possible in 2 minutes. But the real goal of the event was to spur more interest among youngsters in technology.

Sponsored by U.S. FIRST (For Inspiration and Recognition of Science and Technology), the Maize Craze drew 28 universities and companies, along with their high-school design partners, to a Manchester gymnasium.

The contest was modeled on an MIT course that stresses the brainstorming, design tradeoffs, prototyping, and testing that make up the bulk of engineering work. Participants were given a large picnic cooler of miscellaneous parts and materials. From those parts, they had roughly six weeks to design and construct their tethered, ball-fetching robot.

While the companies could use any or all of their engineering staffs on the project, they had to include high-schoolers in the design process. A teenager might just contribute a winning design idea, since "young people don't know what can't be done," MIT Professor Woodie Flowers told the teams.

The two-day competition involved more than 100 participants

and some two dozen referees, judges, and FIRST officials. A thousand or so spectators added to the excitement.

Twin 256-sq-ft arenas were set up to keep the action flowing. Each arena was covered in 2-inch-thick layers of feed corn (hence, the Maize Craze), and each sprouted 2-inch-dia PVC tubes from its center and corners. Competitors brought their creations to the arenas, connected them to power umbilicals trailing from the gym's ceiling, and the two-minute battles began.

Contestant machines could choose to capture high-point-value balls from atop the PVC tubes or scramble to collect one-point balls from the floor. Interfering with opposing machines was perfectly legal, and tugs of war and open-field tackles delighted the crowd.

Robots varied greatly in appear-

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ance and talents. Some were grabbers, others scoopers. Most combined the two. Since all captured balls had to be present in a team's home base at the end of a round in order to count, each round featured mad dashes home through the slippery corn.

The problems with traction were often the most discouraging. Caterpillar treads, narrow wheels, spiked wheels, even paddle wheels—every possibility was present.

Arranged around the gym's periphery, pit areas were noisy, crowded, and very friendly. One of the most impressive parts of the competition was the camaraderie of the teams as they shared tools, techniques, and opinions on each other's designs.

In the end, the Nypro, Inc./Clinton High School machine from Massachusetts won the contest. Its

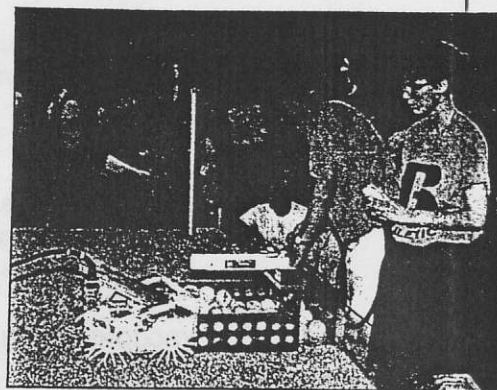
12 high, narrow wheels feature tennis-ball-sized cutouts. The machine doesn't have to bother scooping up balls, it just rolls over them and traps them between the wheels in the cutouts. The balls seem to aid traction and the drivers don't have to coordinate as much as other designs to pick up ball after ball.

Apart from the competition, the engineers and young people attended a banquet where awards were given out for creativity, craftsmanship, best offensive and defensive plays team spirit, sportsmanship, and photogenicity.

At the banquet, engineer Dean Kamen explained why he started FIRST: "When I was a kid I just knew that America had the best scientists and engineers. When I retire, I want to be sure of the same thing."

Dr. Allan Bromley, the White

House Science and Technology Adviser, also acknowledged the problems this country faces in attracting talented young people into the technical professions. In 1989, the nation's engineering colleges graduated 67,000, while such schools in far smaller Japan graduated 77,000.



Beautifully made Delco/Kokomo High ball-scooping machine won the award for best craftsmanship and made the final four in the 'Maize Craze' competition.