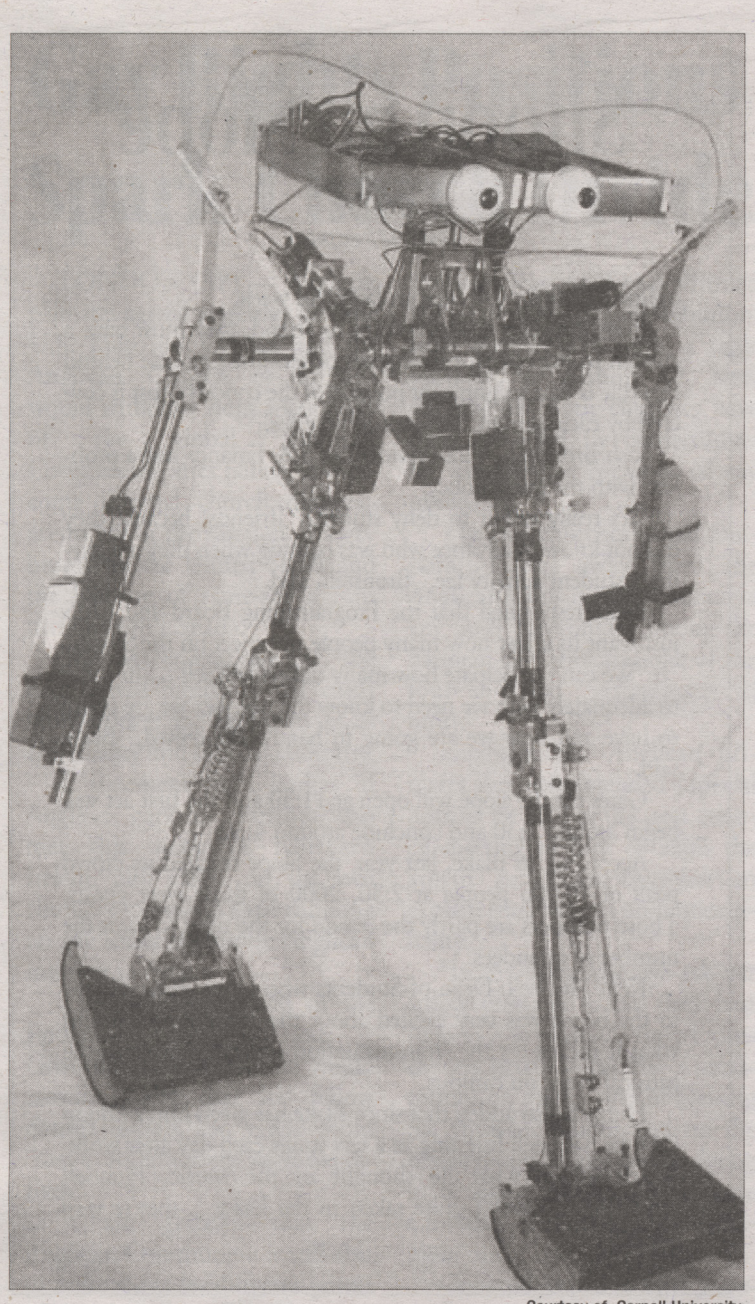
Researchers Unveil Robots



Courtesy of Cornell University

Do the robot. *Scientists at Cornell, MIT and Delft University, the Netherlands, have developed robots with the ability to replicate human walking.*

By REBECCA SHOVAL
Sun Staff Writer

Researchers at Cornell, MIT and Delft University in the Netherlands recently introduced the three newest humanoid robots to the American Association for the Advancement of Science.

Each robot has the ability to replicate human walking. The robots were built to resemble humans, complete with two feet, two arms for balance and ankles to push their feet off the ground. The robots also have purely decorative eyeballs.

Each robot has its own characteristics. MIT's Toddler, by far the shortest of the three, has a slight side-to-side wobble in its stride. Electric motors are required to make the ankle move. Toddler, however, is also the smartest of the three. The other two robots walk because of their mechanical design, but Toddler has a brain equivalent to that of an ant. Thus, the robot was able to teach itself to walk in about twenty minutes. Toddler can also adjust itself to a new environment, in a manner similar to that of humans.

Delft University named their robot Denise. Denise stands as tall as the average human female and is propelled by a stream of compressed air hitting the robot's hip.

Cornell's robot, about three feet tall, must first be supplied power to its ankle to push off. As soon as the forward foot touches the ground, the rear foot is alerted to push off the ground. Cornell's robot is by far the most energy efficient because gravity brings its foot down once it has been pushed off the ground; Denise and Toddler use energy at all stages of their movement. The energy used by the Cornell Efficient Robot is equivalent to that of a human of equal weight walking slowly.

"The Cornell team's passive mechanism helps greatly reduce the power requirement," said Junku Yuh, a National Science Foundation expert on intelligent systems. "Their work is very innovative."

The researchers at Cornell, Delft and MIT found their inspiration in 19th century children's toys. These toys were able to walk downhill, but little progress had been made in making walking robots since their time. Scientific research on these toys began in 1988. The toys swayed from side-to-side, just as the Toddler does. Denise and the Cornell Efficient Robot follow a more human model of bending their knees in order to lift their feet.

"In other robots the motors are fighting themselves," said Prof. Andy Ruina, theoretical and applied mechanics. Ruina has been working on developing the Cornell Efficient Robot since 1992.

Prior to the announcement of these robots, the Honda Asimo, which had large and flat feet, was the most famous humanoid robot. The Asimo could walk backwards and up stairs, features the new robots do not have. Unlike these three new robots, however, the Asimo required considerably more energy than that of a human; about ten times more power is needed to move the Asimo. Denise and Toddler use less than half the energy of a standard fluorescent light bulb.

The research for these robots was done in part for study of human movement.

Some researchers, such as Steven Collins, a University of Michigan researcher who worked on the Cornell Efficient Robot, feel that the robots will be of use in creating better robotic prostheses for the rehabilitation of people who lost limbs.

"I think that you can't know how the foot should work until you can understand its role in walking," Collins said.

Much prior research in walking robots has been disregarded for human use because people must be able to walk uphill with little energy.

CEO Encourages Student Leadership On Campus

By SAMIRA CHANDWANI
Sun Staff Writer

As part of the Park Leadership Speaker Series held at the Johnson School, distinguished Cornell alum Larry Tanenbaum '68, gave a keynote speech yesterday evening on the themes of leadership and entrepreneurship.

Tanenbaum, who graduated from the College of Agriculture and Life Sciences with a B.S. in economics, has had a long and varied career in the business industry. He is currently the chair and CEO of Kilmer Van Nostrand Co. Ltd., a construction company that specializes in infrastructure projects within Canada, the United States and South America.

An avid sports enthusiast since his days as a student manager for the Cornell hockey team, Tanenbaum was recently appointed as chair of Maple Leaf Sports & Entertainment Ltd., and is the

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Alcohol, Weight Gain Linked

ALBUQUERQUE, N.M. (U-WIRE) — A White Russian has 400 calories.

That might not be a concern on a Friday or Saturday night of fun, but a study published Feb. 15 that showed an association between drinking and being overweight might make a person think twice before ordering one.

Rosalind Breslow, co-author of the study, said alcohol has seven calories per gram. Consuming these calories isn't bad unless a person consumes many drinks, because the calories add up, she said.

Breslow said the study associates how much and how often people drink with their body mass. It indicates the average nonsmoking adult will have a greater body mass index if he or she consumes more alcohol.

The body mass index is the ratio of a person's weight over his or her height.

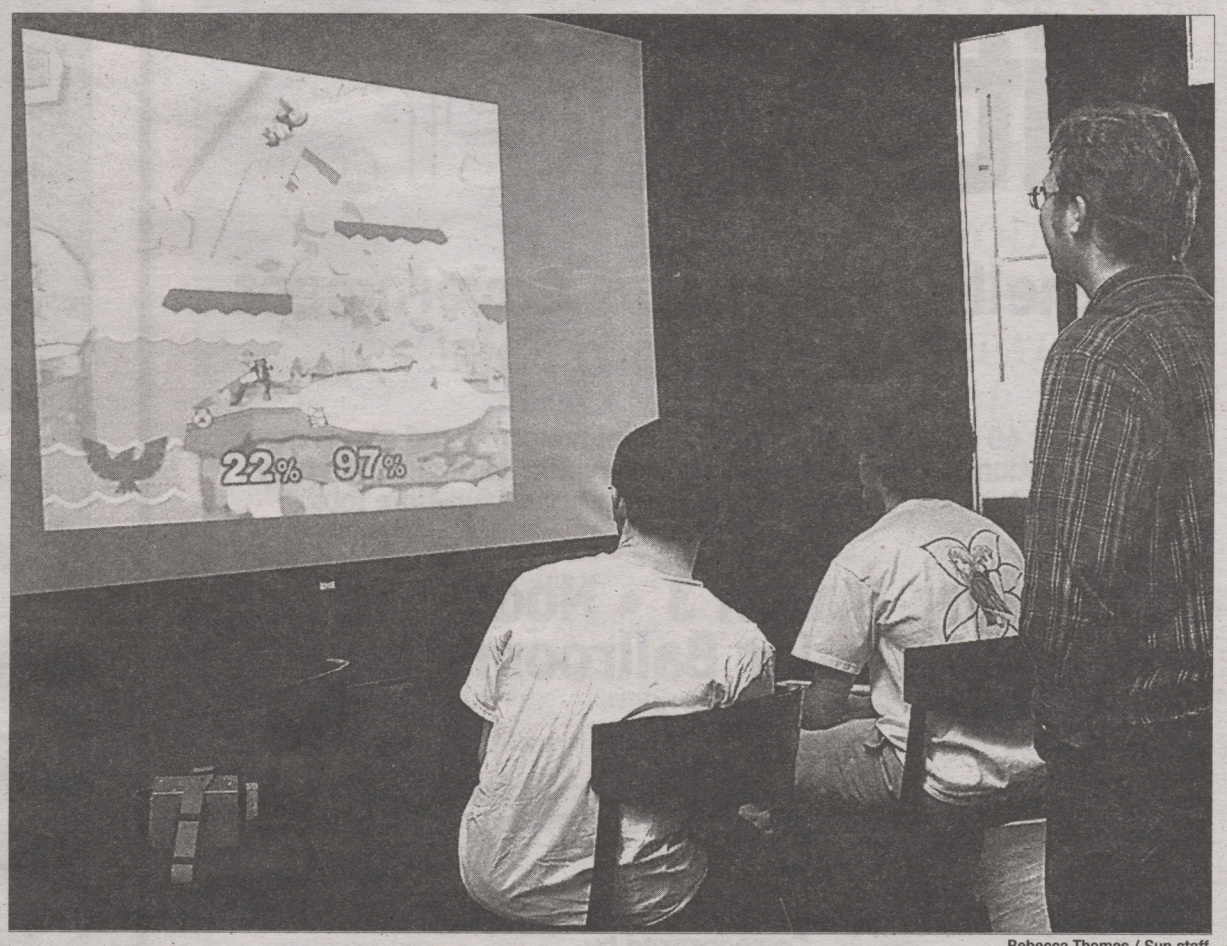
"People who drank the smallest quantity with the greatest frequency most days of the week had the lowest BMI," Breslow said.

Those who drank the largest amount but not very often, about once a week, had the highest BMI, she said.

She said the study didn't specifically look at binge drinking, but the results of the study are consistent with binge drinking patterns.

-Rivkela Brodsky (U. New Mexico)

Smash 'em



Rebecca Thomas / Sun staff

Benjamin Webber '07, Josh Wiener '07, and Ned Damon '07 hang out in Alice Cook House with the Cornell Super Smash Brothers Club.