

Patel Toys

Senior MDET Major To Design, Build Robot

By William J. Neil

Can you remember the days of the not-so-distant past when the ideas of men walking on the moon, doctors routinely performing open-heart surgery and coronary bypass operations, engineers constructing nuclear power plants and weapons, and automated mechanized robots skillfully performing the tasks of assembly line workers

were only thought to be possible in science-fiction books, movies, and television programs?

Even if you are not old enough to recall those bygone days which make today's technology appear that much brighter by comparison, you are undoubtedly aware that the first three of the above four circumstances have become realities and are now commonplace occurrences in contemporary times.

And thanks to the efforts like those of a dedicated Capitol Campus student, the last one is also about to become a reality.

Dilip Patel, a senior Mechanical Design Engineering Technology major (MDET), has become increasingly interested in the study of robotics. He has just completed a five-week repair project on a "toy" robot, and ultimately plans to design and build his own model industrial robot from scratch as an independent study project next term.

The recently completed "fix-it" job required Dilip to repair the drive mechanism in the robot's arms from the inside, plus some additional "tune up" work to redesign the internal system and make it more efficient.

The robot (which, by the way, is nameless and therefore shall remain so throughout this article) was donated to the school by Mr. Bob Raffensberger Jr. of York, a friend of Dr. Haller's (a Capitol Campus engineering instructor). Although Dilip regards this mechanical guinea pig as a "toy"—at 31 inches tall and 235 pounds, it is a mighty hefty toy—it is particularly dexterous considering its structure and bulk. The automatically operated robot, which is housed in the Engineering Laboratory, moves forward or backward on tracks like those found on an army tank. Its two telescope-type arms can be extended and also maneuvered up or down. The arms can lift seven pounds apiece, and are replete with two "fingers" (or clippers) which can grasp objects. The robot's head is capable of moving left and right—but cannot rotate in a complete circle, no matter what you may have seen on the "Saturday Morning Cartoon Colorama"—and its eyes blink from time to time.

But what makes Dilip think he is qualified to tackle the monumental task of building a robot from the ground up? After all, he has only performed minor surgery on a patient which was the doing of another man; the task at hand

requires him to become a junior Dr. Frankenstein, building a mechanical creature from nothing but a bag of bolts and some metallic odds and ends.

"The work that I have done on the toy robot has given me some much-needed background," Dilip explains, "and the techniques behind it (repair work) provide an excellent application of the ideas of engineering. Sure, this model is amusing, but its workings are no different than those found in the larger models."

The robot on the drawing board for next term is a model of an industrial robot. That is, one which can be programmed by a microprocessor to automatically perform various types of practical jobs. "The robot I am building will be small (four feet tall, an arm length of five feet, and weight of 200-250 pounds)," noted Mr. Patel. "It is only a 'demonstration' model, because to make an actual one would be much too costly." As it is now, Dilip and Prof. Schiller are partly funding the project themselves, because the Engineering Department simply doesn't have the money to support the entire undertaking, which will cost in the range of \$1-2 thousand.

Besides Dilip, there are other students at Capitol Campus who are helping to spur the interest in robotics. Salvatore Sebastiani, another senior MDET major, is currently working on a research paper dealing with industrial robots and over the summer he will assist Dilip in finishing his project. A Capitol Campus graduate student, Raj Varma, is writing his master's thesis (Business Administration) about industrial robots. Two other Electrical Design Engineering Technology (EDET) majors are also planning to construct parts of robots. They are Paul Collman and Jim Buckley.

Despite the almost invisible presence of robots in industry today, Dilip expects a proliferation of the beasts in the future. "Robotics has a very bright future in the United States as well as

overseas. At present, Japan is using more robots for production than is the U.S. We should eventually surpass Japan, and create a cheap labor force," noted the mechanical engineer.

The robots can be used for many different kinds of jobs, not only tightening screws on an assembly line or others that one usually thinks of when he visualizes robots at work. For example, Dilip anticipates the day when robots will be used to "do all the dirty work and other tedious jobs," such as replacing supermarket personnel, painters, welders, and of course, assembly line workers. The economy will benefit, in Dilip's view, because the benefits and demands of the labor unions (witness last week's example of the United Auto Worker's dispute) keep increasing while the productivity keeps decreasing. "The robots will counter this situation," Dilip explained, "and the greater demand for robots will result in a draft of skilled and educated people into the work force."

Concerning the many unskilled laborers who would be put out of their jobs by these mechanical monsters, Dilip explained that there will always be employment available for such people, and that the unemployment rate will not significantly increase.

For the first time in Capitol Campus history, a course dealing with robotics (titled "advanced Kinematics") will be offered next term, a fact which pleases Mr. Patel. "I am glad that the course is being offered, because there are not enough schools in the United States that deal with automation or industrial robots," he commented. The course will be taught by Prof. Schiller, and if the response is encouraging, it will be offered on a regular basis.

It would be a good idea to keep all of this information in mind the next time you get the urge to kick an innocent vending machine. Its brother may be standing right around the corner, just waiting to kick you back.



Photo By Timothy J. Moersh

DILIP PATEL AND FRIEND

Grad Students Protest In D.C.

by Kathy Erwood
Graduate Student Union

"Books Not Bombs" and "2 4 6 8, we want to graduate!"

These were two of the chants heard in Washington, D.C. on March 1, 1982. Approximately 5,000 college students participated in National Student Action Day and among them were three Capitol Campus graduate students: Margaret Morgan, Sam Pisamo, and Kathy Erwood. The purpose of this day was to lobby members of Congress on the issue of student financial aid cutbacks and especially the elimination of graduate students from the guaranteed student loan program.

The Capitol Campus students were able to attend two small meetings with the legislative aides to Allen Ertel and Bill Goodling and also a large gathering of Pennsylvania students who met with Senator Arlen Specter and the staff aide to Senator John Heinz.

It appears that many Democrats and Republican Congresspeople are not pleased with their proposed financial aid cutbacks and have notified President Reagan about this issue. On the other

hand, they are not certain of which portions of the proposed budget they will be permitted to vote on. Ertel, Goodling, Specter, and Heinz are among the opposition to further cutbacks in aid to higher education.

Peter Peyser (Rep-NY) and Tip O'Neill (Rep-Mass.) were among the last speakers on the steps of the Capitol in the late afternoon. They vehemently urged ALL students to take some course of action (letters, phone calls, visits) in order to make our Congressmen and women aware of student opposition to these serious cuts in higher education. Although you may have signed a form letter, please continue to write or call your Congressional representatives about your feelings on this issue.

The Graduate Student Union wishes to thank the SGA for making the trip possible and also Capitol Campus students for making this trip worthwhile. Nearly 1,000 letters were signed by students to their respective Congresspeople and delivered to their offices in Washington, D.C.