Experimental robot may serve as helping hand for the disabled

Fingers, hands, arm, feet — imagine facing the day without them. Even simple routines like combing your hair, brushing your teeth, and brewing that first cup of coffee would be impossible. Yet that is the situation encountered by thousands of paralyzed and otherwise handicapped people who have lost the use of their limbs. It may not be long, though, before they gain a certain degree of independence in the form of a robot.

A computerized companion as nimble and quick-witted as R2-D2 is still years away. But L. Andrew Oldroyd, assistant professor of computer science, is experimenting with a computer-controlled mechanical arm. When attached to a countertop or wheelchair, the arm should be able to perform such household chores as making coffee, stirring soup, or even frying eggs.

"A lot of the fundamental research in robotics has already been done," Oldroyd said. "What's needed now is the development of research concepts to the point of practical use."

Robotic arms, he points out, are not a new idea. Originally called teleoperator systems or man amplifiers, they date back nearly 40 years when they were developed to handle radioactive materials at a distance. Now, they also aid in the manufacturing industry as well as in the exploration of space and the seas.

What makes Oldroyd's mechanical arm project novel is the idea of adaptive control. It's relatively easy for a robot to accomplish a task like making coffee if the ingredients and equipment are in exactly the same location every time. But since that is rarely the case, Oldroyd is devising a system that makes it possible...
Making the rounds on Francis Field House's indoor track is part of the WU physical fitness program.

Fitness buffs brave early hours in exercise program at Francis

In the early hours of the morning, the silence of the Francis Field House invigorates the heart and awakens a sleepy group of WU administrators, faculty and staff preparing for an hour of exercise and running. Their reasons for being there vary, but all share the goal of better health.

They are participants in one of two 10-week physical fitness programs sponsored each semester by the Department of Sports and Recreation. The group meets every Monday, Wednesday and Friday from 7:45 a.m. for 30 minutes of individualized exercises and 30 minutes of running. The program regularly attracts at least 30 to 35 participants ranging in age from 20 to 60. One third of the participants are women.

"The majority who enroll are just starting out and need guidance and structure before they begin an exercise program on their own," explained Richard Larsen, WU assistant athletic trainer and director of the fitness program for the last two years. "Some of the younger participants want to stop the deterioration of their bodies before it's too late. Older participants want to lose weight or simply to feel better, work better or reduce stress. There are many benefits to a regular exercise program..." said Larsen.

Leonard J. Banaszak, professor of biological chemistry, agrees with Larsen. "You have to have a certain amount of devotion to get up at 6:30 in the morning," said Banaszak, "but it has had positive effects. I have more energy for my work, and I generally feel better." Sheldon S. Helfman, professor of architecture, echoes Banaszak's sentiments.

"At first it was embarrassing because there were a lot of exercises I couldn't do," Helfman said. "But I can see my improvement every day. I feel better and I've lost weight, too."

Although carefully tailored by Larsen to each person's age and present physical condition, all the exercises are designed to increase the heart's ability to pump blood. Each participant exercises for a sustained period of time at a certain heart rate. These exercises not only strengthen the heart muscle, but lower blood pressure, increase circulation, decrease the amount of fats and cholesterol in the bloodstream and increase the individual's tolerance of stress.

Participants start slowly and build up their endurance, says Larsen, because overexercising is not only uncomfortable, but dangerous. Larsen insists that participants over the age of 35 have the approval of their physician. Both Larsen and his assistant, Jamie Sturm, are certified in Cardio-Pulmonary Resuscitation (CPR) and are prepared for any emergency.

As assistant athletic trainer, Larsen is responsible for the prevention, treatment and rehabilitation of athletic injuries to student athletes. In addition to the basic exercising program, an optional pre- and post-fitness evaluation to determine cardio-vascular improvements and body composition measurements is available. Larsen also provides information on stress, reducing, diet and how to stop smoking.

The next 10-week session will be offered March 28-June 3 and costs $40. The optional fitness evaluation is an additional $20. Individuals interested in the program should contact Larsen at 889-5220.

Dr. William H. Danforth is professional performing artists to schools and communities throughout eastern Missouri and southwestern Illinois, and the Arts and Education Council of Greater St. Louis, which offers services to member agencies. Collectively, these agencies serve more than two million adults and children.

This year, for the first time, eight WU departments became eligible for Arts and Education Council funds: Asian Art Society, Department of Chinese and Japanese, Department of Music, Performing Arts Area, the schools of Architecture and Fine Arts, University College, and the Gallery of Art.

Chancellor William H. Danforth is chairman of the Education Division of the council, which Gloria White, associate vice chancellor for personnel and affirmative action, is this campus's drive coordinator.

Certain premiums accompany various gift amounts, which are tax deductible. Faculty, administrators and previous givers have received pledge information. Pledge cards are also available at the Personnel Office, Ext. 5990, on the lower level of South Brookings Hall. Pledge cards and checks (no cash, please) should be returned no later than March 15 to the Arts and Education fund in the accompanying self-addressed envelope or to White at campus box 1184.

Lucjan Krzukowski, former dean of the School of Fine Arts, who holds joint appointments as professor of art and adjunct professor of philosophy, recently completed this 22 by 10-foot mural above the front door of the new HBE Corp. headquarters, 11330 Olive Street Rd., Creve Coeur. Completed last December, Krzukowski's work of art is believed to be one of the St. Louis area's largest outdoor murals. Fred S. Kammer, HBE's president and founder, commissioned the mural.

Robot — continued from p. 1

to modify the robot's actions as it moves.

For instance, if the coffee jar is a few inches to the left of where the robot is programmed to expect it, the user can command the robot to reach further to the left. Afterward, the robot remembers the new location of the jar.

"The whole idea is to devise software to let someone program the machine in a fashion that is extremely simple, yet adaptable to the situation," he explained. "With a sophisticated control system, an inexpensive microprocessor (computer chip) can be coupled with an inexpensive robot to do household chores."

At present, Oldroyd's robot is activated by commands typed onto a computer terminal keyboard. Eventually he will use voice control, programming the robot to respond to about 30 simple phrases. He plans to demonstrate the robot's abilities this spring, when he'll seek comments from handicapped people and therapists. Perhaps future programs can even be developed for grooming functions, like combing hair and brushing teeth, he said.

Oldroyd, who has taught several undergraduate classes in robotics, predicts that robots will be common household servants in as little as five to 10 years. "The changes yet to come from robotics will far outweigh the changes we've seen from computers," he said.
Ambitious sculpture recovery jobs bring new life to Washingtons

Washington University, named for our first president and granted its charter on George Washington’s birthday 130 years ago, is doing more for the memory of Washington today than simply serving as a namesake. The University’s Sculpture Conservation Laboratory has in the past seven years restored three nationally significant Washington statues in three different U.S. cities.

First to be restored, in 1976, was a life-size Washington bronze located in St. Louis’ Lafayette Square. That statue is a copy of the famous Carzatta marble work undertaken by French artist Jean Antoine Houdon in 1785. The original is considered to be this country’s most priceless marble statue. The bronze copy in Lafayette Square is one of the first six authorized by the Virginia Legislature to be cast from the marble original.

In New York City, two years later, the University’s Sculpture Conservation Laboratory finished restoration of the famous Washington statue in front of Federal Hall on Wall Street, where Washington gave his inaugural address in 1789. That twice life-size bronze — considered a national treasure, was completed by American artist John Quincy Adams Ward in 1883.

And just two months ago, WU sculpture conservators restored the pre-Civil War Washington monument near the capitol building in Richmond, Va. Rehabilitation of this multi-statue work is considered the most ambitious sculpture recovery project ever undertaken, costing $200,000 and requiring more than three months to complete.

On all three Washington projects, and in dozens of other restorations the WU conservators have undertaken, far more is involved than merely polishing badly tarnished bronze surfaces. On each project, advanced cleaning methods are used to remove damage done to the statues by sulfur in industrial pollutants.

First, the WU conservators bombard the bronze with powder-fine glass beads, a process also used to clean delicate jet engine parts. Then, heating the statue with blow torches while spraying the hot metal surface with special chemicals, the conservators cause a chemical reaction called patination. Several such treatments restore a statue’s original rich brown color. Finally, protective acrylic resin coatings are added to prevent future damage.

Are more George Washington rehabilitation projects planned by the WU Sculpture Conservation Laboratory? Chief conservator Phoebe Weil says possibly two more — one at the Chicago Art Institute, the other in Brooklyn.

Robert L. Pierce, assistant professor of social work, has been elected to the board of directors of the International Institute of Metropolitan St. Louis. The institute is a non-profit social service agency that helps local immigrants and refugees and conducts educational and cultural programs to improve cross-cultural understanding.

Henry G. Schwartz, August A. Busch Jr. Professor of Neurological Surgery at the School of Medicine, has received the Award of Merit from the St. Louis Metropolitan Medical Society. The award is the society’s highest honor, and is presented only when the award and honors committee knows of a deserving recipient. The society recognized Schwartz for “outstanding contributions to medicine.” Schwartz is a neurosurgeon at Barnes-Jewish and St. Louis Children’s hospitals.

Jeffrey Skolnick, assistant professor of theoretical chemistry, has been selected as an Alfred P. Sloan Research Fellow. The Sloan Fellowship is accompanied by a grant of $35,000 for research support. Recently, he was awarded a grant of $25,000 for research support. Recently, he was awarded a grant of $25,000 for research support.

John C. Thompson, assistant vice chancellor for planned giving, discussed cultivation and solicitation techniques for donors of trusts, bequests, and major gifts at the Advanced Planned Giving Seminar in early February. Held in Alexandria, Va., this annual program for college and university development officers is sponsored by the Council for Advancement and Support of Education.

Carol Winkelmann (BSCHE ’84) won a first-place award in the 1982 Technical Art and Writing Competition of the St. Louis chapter of the Society of Technical Communication. Her “‘Switchboard and Reception Desk Manual for the St. Louis County Library,” written as a final project for Technical Writing 310, an engineering school course, received the ‘Award of Excellence’ in the student writing category. Winkelmann’s manual will be displayed with winning entries of international-level competition at the 30th International Technical Communication Conference, May 1-4, at the Sheraton-St. Louis Hotel.

Campus Notes
Thursday, Feb. 17

1:10 p.m. George Warren Brown School of Social Work Lecture, Andrew Joyce, director of research, Center on Disability and Community Integration.

2:15 p.m. Council of Alumni & Friends of Appell, 8th Circuit, C. Judah Clay, U.S.C.C. District Court, Eastern District, Mo., and Judge Fernando Garcia Jr., 16th Circuit Court, Jackson County, Mo., Courtroom.


7:30 p.m. Great Women's Film Series, "From Tra-

The deadline to submit items for the March 3-15 Calendar Deadline. Each item must be typed and state time, date, place, nature of event, ticket prices, and admission. Items and forms not submitted in time will not be printed. If available, include speaker name and identification and the title of the event. Those submitting forms, please include your name and telephone number. Address items to King McClain, calendar editor, Box 1144.