A new, talking computer has been developed by engineers in MIT's Research Laboratory of Electronics (RLE) which can pronounce any word or string of words in English language. The remarkable thing about this computer is that it has not ever seen a word before to pronounce it, the computer learned pronunciation rules from the way the spoken words sound. 

When a word is typed into the computer, it first parses several words to make up the word. Across its display screen flicker the words of the English language. From the dictionary, the computer selects the appropriate pronunciation for the word and then starts the speech process. 

Surprisingly, this voice is completely synthetic; it is produced by a model of the human vocal system which has been programmed into the computer. This vocal tract, developed by Dennis Klatt, a research associate in electrical engineering, receives information from the computer which tells it how to alter itself every microsecond to create a speech wave.

The text-to-speech system was created by MIT engineers under the leadership of Jonathan Allen, Associate Professor of Electrical Engineering, as part of an overall effort at RLE to develop a machine to read to the blind.

According to the system's inventors two major problems had to be overcome in building this machine: 1) making a machine to recognize printed matter and change it to computer language; and 2) building a computer which would transform this information into understandable speech.

In creating this "talking computer," Allen and his co-workers have developed a new method of teaching the computer to read, called "fruitlex" method of teaching the computer to read. According to Allen, "We could have attempted to feed all the words in the English language into the computer's memory, and instructed the computer to match each word in a text with a pronunciation.

This, he said, would not have beenwise, however, because there are several hundred thousand English words, and because new words are continuously being invented, Allen added that "It would be extremely difficult and anxious to cram all the known words into a limited computer memory, and to attempt to keep up with the words that enter our language continually."

Allen believes that it is better to give the computer a basic understanding of the rules of pronunciation, so that the knowledge the computer has will be useful for a much longer period of time.

As for all words are composed of a relatively few (approximately 11,000) atomic units or "phonemes" which do not change over long periods. Using these morphs, a computer can (Please turn to page 7)

Class size creates shortage of advisors

By Mike McNamee

The increase in the size of the class of 1978, along with a preference to advise fewer students on the part of the faculty, has led to a severe shortage of advisors for the freshmen who will be entering MIT in September.

According to Associate Dean for Student Affairs Peter Butter, head of the Freshman Advisory Council, approximately 95 more faculty and staff advisors are needed if the FAC is to assign each advisor no more than 50 students to advise.

So far, Butter told The Tech, 98 faculty and 62 staff had agreed to serve as advisors. If each advisor is assigned the number of advisors he has told the FAC he would prefer to have, this would only take care of 67% of the approximately 1000 students that will be entering this fall.

At the beginning of May last year, Butter said, there was a shortage of 50 advisors. "We sent a letter to the department heads, and eventually word got around and we almost reached the preferred number," Butter explained. "But there is twice as large a shortage this year, and it's two weeks later in the term."

Two factors

"While the number of advisor volunteers is similar to that of last year," Butter said in the letter to the department heads, "the preferred number of advisor volunteers is smaller."

Butter explained that each faculty or staff member who volunteers to advise freshmen, must identify how many advisors he (Please turn to page 6)
Myrdal decries 'cruel weapons'

A "cancerous growth" of the military going "beyond the bounds of reason" is threatening the world today, and can be stopped only by banning use of "excessively cruel and harmful" weapons, an arm-control expert told an MIT audience last week.

Dr. Alvar Myrdal, visiting Professor of Political Science, told the audience of the final Technology and Culture Seminar of the year, "The world we live in is becoming increasingly militarized and has gone beyond the bounds of reason."

Myrdal's talk addressed the topic, "An Era of Neo- Barbarism: Arms and Disarmament in a World of Power Politics," and the present disarmament talks as "dismal failures." "Not one weapon has been disarmed," Myrdal charged. "Weapon-makers who should be disarming are increasing their capability to ever newer heights," he stated.

Myrdal said that saw two means whereby disarmament could still be possible: the setting of individual weapons bans by the countries of a specific region of the world; and "combining our current striving towards disarmament with the work done by humanitarian's position from the point of view of disarmament, we can slip over some of the philosophical stumbling blocks that occur."

Myrdal stated that precedents for limiting weapons which are "excessively cruel" already exist. "The Saint Petersburg Declaration of 1668 clearly states: 1) The only legal object of war is to weaken the forces of the enemy; 2) To do this is sufficient to remove the enemy from action; 3) Anything which would uselessly prolong the agony of men or make death inevitable is illegal and against humanity."

Myrdal also cited the 1907 Hague Convention as stating that "The rights or means to harm an enemy are not unlimited."

The same document also contains a provision that "attacks or bombardments on towns or villages are illegal." Myrdal concluded that agreement on the (Please turn to page 5)
1974 Awards Convocation held

The following people received Convocation Awards: Arts and Sciences Convocation in Kresge Little Theatre last Thursday.

The William L. Stewart, Jr. Awards
Okon Mfon Amana, G. David Mark Bernstein '74
Eric Lewis Bogatin '76
Val Matthew Moodie, Jr. '75
Charles Robert Kenty '75
Michael Gregory Kozinetz II '75
James Albert Moody '75
Paul Andrew Pangaro '74
Theodore Shillin '74
Patricia Ruth Callahan '75 and Robert Eugene Lee '75
Robert Lee Hunter, G and Steve R. Taylor '73
Certificate of Appreciation
Robert Dennis McChesney
The Class of 1948 Award
William David Young '74
The Admiral Edward L. Cochrane Award
Edward Joseph Hanley, Jr. '74
The Eastern College Athletic Conference Medal
Lawrence David Bell '74
MITAA Pewter Bowl Award
Shelley Faith Bernstein '74
Varsity Club Award
Johannes Georg Akerman '77
Special Achievement Award - Athletics
John Russell Kirkland '74
(Please turn to page 6)

71 slump cut enrollments

Source: E.J.C. Data ("Liberal" value based on U.S. Government estimate)

(Continued from page 2) We've found here that parents are far more worried about it than students.

The sharp decline in employment of engineers well-publicized, another factor that influenced enrollments. "It was one of the first times since the Depression that a large group of professional people was thrown out of work, in mass," Bruce said. "Naturally, it got a lot of attention." People don't think that professionals have employment problems. "I suspect that a lot of the people laid off in the 71 crunch were people who were not productively employed, and these were the people who found it hardest to get new jobs," Bruce continued. He added that he had not seen too many articles on the rising demand for engineers.

Internal trends

Bruce said that he was mainly interested in local, internal trends in engineering education at MIT. The growing number of students who are using engineering as a stepping-stone to another profession, for example, was a development that "will have a large effect on the engineering profession." "The applicant pool at MIT is changing, with more and more students coming here to get a sound technical background before entering some profession," Bruce said. Some MIT faculty have resisted this change, he added, noting that "they feel that we should!" waste a spot on a person who is ultimately going on for a medical degree, and should use our resources to train professional engineers. They're worried about the impact on their own discipline.

Professor Wilbur Davenport, Head of the Electrical Engineering Department, said that he had noted a trend of students "going into things other than EE or engineering." "I think EE is second in the Institute in medical school applications," Davenport said. "This department has always had a history of graduates going into other technical fields. Now they're also going into non-technical fields."

MIT President Davenport said that he doubted that the trends at MIT are the same as those across the country. "MIT is a special place," he said. He pointed out that students at many engineering schools must "enter" engineering during the freshman year, and that it is difficult to get into EE as opposed to another profession. "I have a feeling that this impact is very heavily on students here," he said. "Many of them don't even realize how different the situation is here from the rest of the country."

Bruce said, "No one's come up with a way of measuring the impact on their own discipline."

"The applicant pool at MIT is changing, with more and more students coming here to get a sound technical background before entering some profession," Bruce said. Some MIT faculty have resisted this change, he added, noting that "they feel that we should not!" waste a spot on a person who is ultimately going on for a medical degree, and should use our resources to train professional engineers. They're worried about the impact on their own discipline.

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In Case of Insomnia

MIT awards... what awards?

By Steve Wallman

A large concert is being planned for this term's Saturday night, with performances by the Beach Boys and the Grateful Dead, according to The Tech's Editor-in-Chief. Also, there will be a series of events during the rest of the year, including the EMU awards ceremony and the annual MIT Awards ceremony. The awards will be given to outstanding students, and will be held in the main auditorium.

Commentary:
The UA needs people to help out

The UA needs people to help out in various capacities, including serving on committees and volunteering for special events. This is an excellent opportunity to get involved in the MIT community and contribute to its success.

Letters to the Tech

Technique I
To the Editor:

This is not an attempt to criticize Mike McNamee's personal and artistic opinions of Technique. I wanted to express my opinion, whatever they may be.

I wish to take specific exception to his claim that "much of the book bears only a marginal relationship to anything that goes on at MIT, and drags more [my emphasis] with Boston and kids on the Common than with legitimate Institute life." I believe that we must stick to strictest guidelines, that an MIT-related event is one occurring on the campus during the academic year that involves students, faculty, and staff. If this were not the case, then we would have to expand the rules to fit any number of essentially non-technique-related activities.

J. Alan Ritter

Technique II
To the Editor:

I would like to attempt to correct some of the misconceptions held by those who misunderstand McNamee concerning the intent of Technique. This is a very important issue, and we must all work together to ensure that the magazine continues to be a valuable resource for all students.

Arithmetic
To the Editor:

We all expect a higher percentage of women to achieve high grades at MIT. The means change, however, your correspondent Dave Davidson (The Tech May 7) may be incorrect, however. The average woman scored only 4000.00 1 to 3 and not 5000.00. Arden Gadus
Myrdal: military growth past 'bounds of reason'

(Continued from page 2)

banning of these weapons and their indiscriminate use was much more likely than any agreement to ban nuclear weapons.

"Nuclear weapons should occupy our thoughts, but to simply call for the immediate dismantling of all nuclear weapons would get us nowhere," Myrdal said. "We must start on these smaller matters and then build up scaffolding for higher demands until we, the victims, are heard."

Myrdal feels that antimateriel weapons are a number one priority for banishment as they "cause an excessive amount of pain." One of the worst offenders is the high velocity rifles such as the M16 which was used by the United States in Indochina, she stated. The bullets of these guns attain speeds of over 800 meters/second and their destructive power "is considerably greater than what is needed. Their use is worse than that of dum-dum bullets which was completely banned by 1899," Myrdal said.

"Modern weapon's technology is aimed at causing more and more destruction. The idea of a clean bullet weaponry seems unacceptable," Myrdal noted.

"Myrdal noted that the people involved were almost all civilians, whereas in World War I only 5 percent of those killed were civilians. In World War II the figure was up to 50 percent; in Korea it was 60 percent; in Vietnam 70 percent of all the people killed were civilians."

"We must go to the war industries, and that the search committee was inclined to "tuck local talent."

If all goes well, all of the department head appointments will be confirmed over the summer, and all will take office before the next academic year begins.

Although they have "not ruled out people inside the department," the Architecture search committee is conducting an "energetic" search for outside people, according to Anderson. He explains that the committee is looking for good outside people partly as a yardstick against which to measure candidates from within the department. Currently, "seven or eight are in active consideration," and the committee is still looking for more information on another seven or eight who are from outside the department; insiders will be considered later.

Three MIT departments to choose new heads

(Continued from page 1)

year as department head, outlined some of the considerations that had gone into the Urban Studies search. He feels that MIT has "the top department in the country" in urban studies, and that it has been undergoing a "rather substantial expansion." Therefore, there is a need to "sharpen and develop" its focus.

Rodwin hinted that the new head will come from within the department, saying, "There are some very good people around," and that the search committee had been inclined to "tuck local talent."

Field Position in Electronics

The Smithsonian Astrophysical Observatory, a small nonprofit organization devoted to non-defense scientific research, operates a world-wide network of laser satellite ranging systems. We are seeking flexible, adventurous individuals to become part of a team responsible for operation and maintenance of laser and camera satellite tracking systems and peripheral equipment located at stations in Arizona and three foreign countries. Field assignments are for two years.

Applicants must have recent hands-on experience and training in electronics, including integrated circuits or electrical engineering experience with lasers, timing systems or digital systems is preferred. Minimum salary $11,000, supplemented by overseas allowances and benefits.

If you are bright, able and interested in a field position with opportunities for advancement, call or write to Joanne L. Tondryk, Personnel Administrator, (617) 495-7371.

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About your preferences, tastes, ambitions, see page 5

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The Netherlands National Tourist office and Newsweek Magazine need some information that only you can provide for a major research project.

Because there are more and more people in the world who are under 24, the chances are that more and more people who will traveling from one country to another will be in your age group.

Since you may well be traveling to Europe this summer, why not make your first stop Amsterdam? You can enjoy Holland for a few days and at the same time answer some of the questions we need answered there.

1. Your passport must prove that you were born between Jan. 1, 1950 and Jan. 1, 1958.
2. You must travel on KLM or other participating airlines, because you start filling in your questionnaire aboard the flight.
3. You must travel non-stop from New York or Chicago and must arrive in Amsterdam your first stop in Europe so that your reactions are fresh.
4. You must stay at least 2 nights in Holland to get enough "feel" for the country to finish your questionnaire.
5. You must be prepared to give us a couple of hours in Holland, if we ask you to, for an in-depth interview.
6. You much check in at the Holland/Newsweek desk at KLM's departure terminal at JFK/New York or KLM's O'Hare/Cleveland or other participating airlines to be announced.

The program begins June 1 and ends Sept. 1, 1974.

Holland/Newsweek Overseas Research Project

By Jane Morris

Hollander C-osmos.

Astronomer's New Hope for Moon's Fringe

"You can't throw away a year's work," says Stanford's Margaret Churchmail.

"If you play it all over, it makes a moon that's very different," she says.

"You can't throw away a year's work," says Stanford's Margaret Churchmail.

"If you play it all over, it makes a moon that's very different," she says.
Engineers develop computer that talks

(Continued from page 1)

...understand at least ten times that number of words.

"The morph lexicon within our computer includes... all the commonly known prefixes, suffixes, and Latin roots," said Allen.

Although programming those morphs into the computer was a relatively simple task, engineers came up against immense problems in breaking words down into the correct sets of chunks. For instance, morphs often change when they are incorporated into words: "pit" becomes "pitting," gaining a "t." "Choke" loses an "e" to incorporate into words: "pit"

problems in breaking words came up against immense relative simple task, engineers morphs into the computer was a Allen.

suffixes, and Latin roots," said

Although Allen still wants to develop this talking computer into a reading machine for the blind, he also sees many other uses for the computer.

A major use of the machine could be in computer output; a library user would telephone the computer and hear what information it has to offer. The machine could also be very valuable in computer-aided instruction, such as teaching children to read. Allen and his associates realize that they will have to make substantial progress before this computer can analyze entire sentences and speak them naturally.
WPI twinbill sweep ends Beaver slump

By Lawrence D. David

Having dropped the last four games in a row, the Beaver baseball team battled back to sweep a doubleheader from WPI by scores of 8-7 and 13-7, upping its record to 16-1, the best mark in MIT history.

WPI was in control throughout the opener and apparently had the game locked up with a 6-2 lead through 6 2/3 innings. (Games in collegiate doubleheaders last only seven innings.) However, a furious rally by the Beavers in the home half of the seventh evened the score at 6-6. A single by Roy Hendricken `76, following a pair of walks, loaded the bases. Another walk, this to Mike Diakos `76, forced in a run, and Dave Tierrel `74 then rode a 1-1 pitch into left to score two more Beavers. After an error kept the rally alive, Kevin Rowland `74 stroked a long fly to tie the game.

MIT again fought back after WPI had gone ahead, 7-6, in the eighth. A hit batter and a walk set the stage for a run-producing single by Steve Reher `74 and a three-run triple by Vic Forde `74, and Bob Train's third inning grand slam homer, a long drive down the right field line, gave the Beavers a 13-7 lead.

The second game was not nearly as close an affair as MIT's bats were hot. A seven-run first inning alone was enough to bury WPI. The Africans, whose good play on a hard-hit smash to momentarily save the game, but Herb Kummer `75 laid a base hit just past the shortstop, scoring Diakos with the game winner.

John Carrolowsky `76 won both ends of the twinbill in relief, the first MIT pitcher ever to win both ends of the twin bill in a doubleheader.

The team was thus thrust into the semi-finals of Sunday, having moved on that far and ready for a tough challenge of a top-notch team that was a quarterfinalist last year.

The team went up 3-0 on a fine 40-yard penalty kick by Yoshida in the first half, but Providence tied the score at 3-3 in threatened time and time again, only to be foiled by Carrolowsky, Yoshida, and Simmonds on various occasions. With ten minutes to go, Kavazanjian converted a kick to make the score 3-3, and the nerves held on for the win. The only dark spot in the game was a pinched nerve injury to key player and scrum-half (comparable to a quarterback) John Whalock, who played three excellent games.

The Beacon Hill Rugby Club defeated Brown in the other semi-final game. MIT met the defending champions with Les Smith playing scrum-half for the injured Wall. This was the first time that Smith had played this position since grade school in Scotland, and he filled in admirably in both offensively and defensively.

MIT won the penalty kick by Kavazanjian early in the second half, but Beacon Hill came back to tie the score at 3-3. Though out-weighted by 20 pounds per man, the Tech scrum showed heart in stopping the Beacon Hill pack, and the forwards, especially the forwards, did a great job.

Two extra periods were needed to break the deadlock, and the score remained tied. In the second overtime, Jim Caruthers stole the ball at midfield and dribbled to the 30, where fellow forward Bill Baker drifted back and put the ball down just inside the goal line. Kavazanjian converted the kick for the winning score. The team was thus thrust into the semi-finals on Sunday, having moved on that far and ready for a tough challenge of a top-notch team that was a quarterfinalist last year.

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