

UNL professor secures information with codes

Cryptography, computer science keeps mathematician in high demand

By JOSH FUNK
Staff Reporter

Secret codes, encryption and secure lines may seem like something out of a James Bond movie, but some UNL professors are working to create and break codes every day.

Spyros Magliveras, cryptographer and computer science professor, writes the codes that keep information secure.

Magliveras has been working in computer science since before it was an established discipline. A mathematician and engineer by degree, Magliveras has worked with computers and codes for the past 20 years.

"The first computer I ever built was an 80/88 PC with a wooden keyboard and makeshift keys," Magliveras said, jokingly.

One of Magliveras' colleagues, Doug Stinson, also is a well-recognized UNL cryptography expert. Stinson is on the editorial board of many scientific publications and has written a book on cryptography, the science of secret or hidden things.

In 1977 Magliveras made a breakthrough for his profession by discovering a cryptographic function in common permutation groups that behaves randomly and does not repeat.

Sound cryptic? It means that Magliveras developed a function, like an algebraic equation, that generates a different result each time random variables are plugged into it. It makes

sense as a code because it doesn't make sense. It's random, chaotic and stumps people trying to break it.

Magliveras sent his code off to a group of cryptanalysts, people who specialize in breaking codes. He said they told him they could break it in a week.

That was in 1988, Magliveras said, and they haven't figured out his function yet.

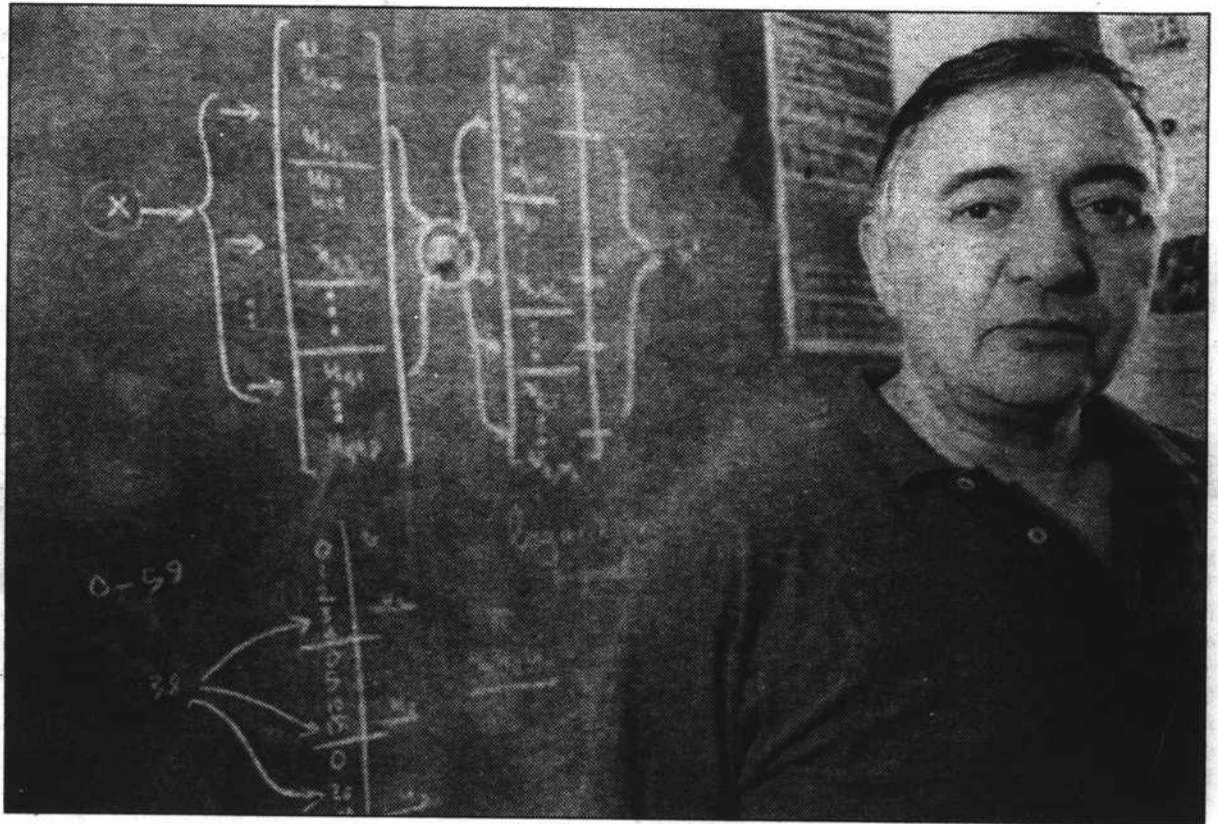
Magliveras used this function to write an encryption program called Permutation Group Mapping, which was invented to protect data transmissions.

Now, public and private organizations use Magliveras' invention. The National Security Agency uses PGM, and within the past few years, Magliveras received a grant from US West to fund PGM development there.

PGM can encode data, video or voice transmissions in a matter of seconds. The data are then ready to be sent across any transmission line. When received, they can be decoded and read.

There are versions of the PGM program available commercially for DOS, and there will soon be a version available for Microsoft Windows so people can use a PGM coding to secure personal transmissions, too.

Transmission traffic from computers, phones, faxes and even from automatic teller machines — which use phone lines — are "open to anyone who wants to listen," Magliveras said.



MATT MILLER/DN
SPYROS MAGLIVERAS, a UNL computer science professor, has been recognized as one of the world's leading cryptologists. A code he developed in 1977 is now used by the National Security Agency.

Cash transfers and important records are sent across transmission lines and need to be secured from prying eyes.

But "all modern communications and electronic transfers are not secure yet," Magliveras said.

For some, the risk of someone breaking a code and gaining unauthorized access persuades them to keep doing things the old-fashioned way.

The Securities and Commodities Commission uses an electronic system to keep track of the world's stock markets, but for security it is still using a simple floppy disk, financial consultant Robert Carver said.

In the next few years as the coding and security improves, though, Americans could be able to file their tax returns using their home computers, Carver said.

The electronic transfer of cash and other important information such as medical records necessitate the use of encryption, he said.

"If there is a patient out in a small town without a doctor, his X-rays and records can be sent to a hospital and receive a diagnosis," Magliveras said, "but that information needs to be protected."

Main St. Café draws attention from all ages

CAFE from page 1

tin and tile.

Lux, who was shooting pool during his second visit Monday to the cafe, said the decor made him feel 40 years younger — another atypical experience for the 21-year-old.

Lux's age group represents only a portion of the diverse crowd drawn to the cafe's environment, said waitress Holly Towns, a University of Nebraska-Lincoln sophomore secondary education major.

Towns said the cafe's patrons include students and professionals.

While students flock to the Thursday night \$2 drink specials, business people tend to dine on the delicatessen's 13 sandwiches and nine soups, kitchen manager Brian Diglia said.

Bruce Miller, claims manager at United Fire and Casualty, said he had been a regular since the cafe's December opening.

Having no regular noon-time hang-out before, Miller now visits up to three times a week to dine on his usual pastrami sandwich. He said he enjoyed the cafe's fast service and friendly employees.

"And my coffee cup's always full," Miller added.

Olson said he felt the cafe's atmosphere blurred the distinctions between food and drink establishments, attracting a diverse clientele many other restaurants and bars don't attract.

"Everyone asks me 'What kind of a bar is it?'" Olson said. "I don't know. Serving food and drink just broadens the base of our patrons."

Lux said Main St. Café's importance lies beyond its style and clientele, though, even beyond the 23-ounce Budweisers the waitress was serving him Monday night.

"Having a place like this in the '90s is the reason Elvis still lives in all of us."

Liquor licensing takes time

By JIM GOODWIN
Staff Reporter

Getting a Nebraska liquor license isn't as difficult as cajoling the bartender for one more beer after last call, but likewise, it requires protocol.

The three governor-appointed members of the Nebraska Liquor Control Commission ultimately decide who receives a license, said Frosty Chapman, the commission's executive director.

The decision follows an investigation by the Nebraska State Patrol and recommendations by officials in the applicants' communities.

Tyler Olson, a co-owner of bars in Lincoln and Manhattan, Kan., is a veteran of both states' procedures.

Olson received his license for the Main St. Café, 1325 O St., in December 1996. He said Nebraska's process was more stringent than other states' because of Nebraska's intricate licensing laws.

Nebraska recognizes 17 classes of liquor licenses, which is about four times the number Kansas does, Olson said.

Distinctions are made between the sale of numerous on- and off-sale combinations of beer, wine and spirits. Restrictions concerning the location of restaurants, bars and package stores inside and outside city limits also apply. Additionally, manufacturers and wholesalers receive licenses different from retail establishments, according to the Nebraska Liquor Control Commission.

Specifically, state statute requires:

- Applicants file as individuals, partnerships or corporations with the state commission at 301 Centennial Mall South. The process includes choosing the appropriate class and paying registration fees. Fees range from a \$30 on-sale beer license to a \$250 brewpub license.

- The commission to give the names, addresses and other information about applicants and their spouses

to the Nebraska State Patrol, which fingerprints and does a national investigation on all names on the applications.

In Lincoln, the City Council conducts a public hearing in the applicants' presence, listening to investigation results from the Lincoln Police Department, said city clerk Paul Malzer. The council gives a recommendation to the liquor commission.

Other local considerations include the uniqueness and locations of the proposed businesses. Malzer said Lincoln allowed a lot of bars downtown because the district was designated as an entertainment center.

Chapman said the entire process could take one to three months. Afterward, the state commission holds its own public hearing, considering local board recommendations, investigation results and various character-related issues before deciding.

Refused applicants may appeal the commission's decision to Lancaster County District Court and can go to the Nebraska Supreme Court.

Campus-crime study released

CRIME from page 1

that in 1994, 65 students out of every 100,000 were victims of violent crimes, or 6.5 students per 10,000 students.

Using schools with on-campus housing, the study found that 11.3 students per 10,000 were victims of violent crimes.

UNL's rate, according to a Daily Nebraskan study of FBI Uniform Crime Report statistics, is 2.44 students per 10,000 in 1994, and 0.42 students per 10,000 in 1995.

Among Big 12 schools, Nebraska ranked eighth in violent crimes per 10,000 people.

Tops in the Big 12 was the University of Oklahoma in Norman which, in 1994, had 5.98 violent crimes per 10,000 students — still below the national rate. Oklahoma

was followed by the University of Kansas in Lawrence, University of Missouri in Columbia, Texas Tech University in Lubbock, Oklahoma State in Stillwater, Texas A&M in College Station, and the University of Colorado in Boulder.

In 1995, Nebraska had the lowest violent crime rate. (Kansas, Kansas State and Missouri did not report statistics to the FBI for that year.)

Cauble said the FBI warns against making campus-to-campus comparisons using their uniform crime reports. There are many factors that affect campus crime rates in each city, including:

- Ratio of males to females.
- Demographics of the surrounding community.
- Location of the school within the community.
- Enrollment.

- Accessibility of the campus from the outside.

- Number of police officers hired by the campus.

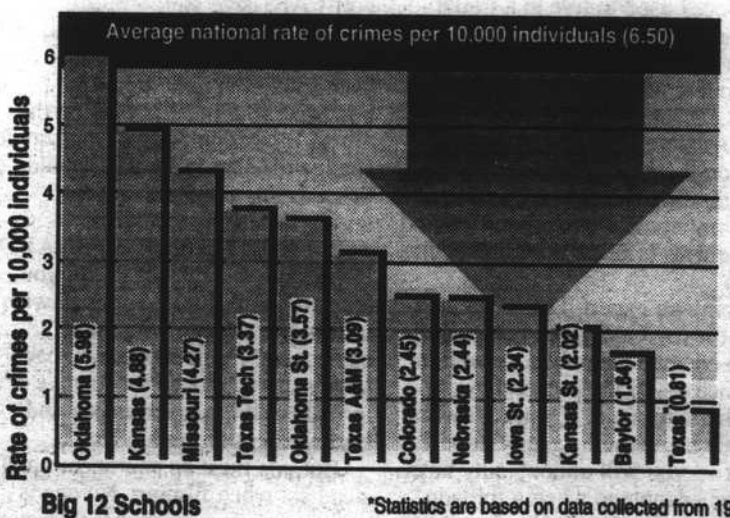
Cauble, who said he had no problems with the Daily Nebraskan study, said nearly every campus did things differently or had different circumstances. He said Baylor, a Big 12 school, is a private school with the smallest enrollment — only a little more than 12,000 students. That affects its crime rate.

The U.S. Department of Education, with the number of schools reporting and the differences in those reports, cannot make an accurate property crime report, Cauble said.

"With the system as it is now ... it's very difficult to compare rates," Cauble said. "There's too many skews that go into the Department of Education to make it accurate."

Crime Time

Below are the rates of reported violent crimes per 10,000 people for Big 12 schools as compared to the national average. Nebraska ranks as the fifth-lowest Big 12 school in violent crimes.



SOURCE: US DEPT. OF EDUCATION

AARON STRECKELBERG/DN