Computer users can now donate some of their machines' processing power to help make the Internet faster.

A new computer program that runs in the background on a user's machine analyzes Internet traffic and beams reports to researchers. The information gathered, they say, could help them improve the speed and reliability of the Internet.

The program, called NETI@home, is led by George F. Riley, an assistant professor of computer engineering at the Georgia Institute of Technology, and Robby Simpson, a graduate student at the university. The project takes its inspiration from SETI@home, a popular software program that uses computers across the Internet, working in tandem to search for extraterrestrial radio signals.

The information that Mr. Riley is looking for is nuts-and-bolts network stuff: how much data are sent back and forth online, which parts of the Internet are likely to become congested (and when), and the amount of information that is lost in transit. But the uses for his findings, he says, could be far-reaching.

The resulting data will figure into the research Mr. Riley is conducting with his graduate students. "We'll use this data in our own simulations of the Internet," he says. "This will help make our simulations more realistic, because we'll have some idea of what the typical Internet user is doing."

Mr. Riley also hopes that his data will help other researchers determine how to make the Internet faster and more reliable. He periodically posts the results of the research on the project's Web site, and expects to make information available soon to scientists and companies in real time (http://www.neti.gatech.edu).

Computer users can participate in the program by downloading the NETI@home software free from the project's Web site. Once the software is installed, the program catalogs the flow of information to and from the computer over the Internet. The software sends a daily report back to Georgia Tech.

Since NETI@home first appeared online, in late March, the software has been installed on more than 1,000 computers. Mr. Riley says he hopes to have tens of thousands of people participating by the summer.

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To reach that goal, the professor will have to convince computer users that the software is both unobtrusive and secure. Although the program runs constantly, it requires a bare minimum of computing resources and kicks into action only when a user is active online. "If you're not running a Web browser, the program's essentially just sitting there," he says.

Nor does the program peek at what users are doing online, says Mr. Riley, explaining that "we don't look at the content of the packets we analyze."

To further allay any security concerns, users can configure the software to withhold information about the addresses of the Web sites they visit and the networks they use.

—BROCK READ

Have You 'Facebooked' Him?

New digital networks have quickly become part of social life on campuses

BY BROCK READ

EVERY TIME TIM PITTMAN logs on to Thefacebook, a Web site that displays photographs and short biographies of college students, he is linked to 120 of his classmates, friends, and acquaintances.

That can be a handy tool when he wants to fire off some quick e-mail messages, says Mr. Pittman, a sophomore at Harvard University. But it is only part of the site's allure. From his friends' profiles, Mr. Pittman can use the free service to link to more than 4,000 other students: casual acquaintances, high-school classmates, and a lot of people he has never met. He says he often browses through that expanded list looking for people who share his interests.

"A lot of my friends send messages to other people who they saw on Thefacebook," he says. "I mainly use it to waste time."

The student-run service puts a digital spin on the illustrated address books that many colleges pass out to students early in the academic year. Like those booklets, known as "facebooks," the Web site helps students put names with faces.

But this facebook works on a larger scale, allowing students to view peers at a number of different institutions. And it adds some new features. Students and alumni can use it to send messages either through e-mail or Thefacebook's own message system. They can also create personal Web pages where they share information about their hobbies and interests, and, in essence, create virtual clubhouses where they control which friends and classmates are allowed to join.

Thefacebook was created in February on a whim by Mark Zuckerberg, a student at Harvard. Just a few months later, its founders have brought it to 32 institutions—usually getting a rush of members. At the University of Chicago, where the service made its debut in May, about 2,400 students registered to use the site in its first week.

The grass-roots success of Thefacebook is mirrored by that of a number of other social-network sites that have recently hit campuses. And a spate of colleges have adopted online-dating sites that offer students the chance to test their compatibility with their classmates. Many students also use a nationwide site called Friendster, which began in 2002 and has grown to millions of users.

As college students continue to devise new ways to use their computers as social resources, some researchers say services like Thefacebook may provide them with an unprecedented window into students' workaday concerns and how they structure their social lives. "My sense is that most students who use the site are still in the curiosity phase," says Michael Kearns, a professor of computer and information science at the University of Pennsylvania. "But if they start using it more and more for prac-

tical purposes, it will be a new way to find out a little more about their social network."

DESIGNED FOR STUDENTS

When Mr. Zuckerberg, a sophomore at Harvard studying computer science and psychology who tinkered with online projects in his spare time, started Thefacebook, he never imagined its moving beyond his campus. In fact, it started as a joke, when he designed a Web site called Facemash that placed two photos of Harvard students side by side and asked users to vote on which person was more attractive.

Mr. Zuckerberg was already using Friendster, like many of his classmates, and he decided that a Harvard-only version of the service could be a hit. Like its model, Thefacebook allows users to connect to one another by creating their own webs of friends and acquaintances. But Mr. Zuckerberg designed Thefacebook's personal-profiles section with college students in mind: In addition to typical categories, such as hobbies and dating status, students can list the classes they take, the dormitories they live in, and what they plan to do over the summer. Those features—and the fact that the site is restricted to students and alumni with college e-mail addresses—give Thefacebook a closer-knit feel than Friendster, which casts a much wider net.

To allay privacy concerns, Mr. Zuckerberg allows students using Thefacebook to decide how accessible their personal information should be. Users can make their profiles available to anyone registered for the service or restrict them to students at their own colleges, residents of their dormitories, or people they recognize as friends.

The service was instantly popular: Within a week of its debut, almost 1,000 students had signed up.

Mr. Zuckerberg recruited his roommate, Chris Hughes, to serve as the public-relations manager for the service, and another friend, Eduardo Saverin, to help assess their chances of turning the site into a successful business. They had to buy additional computer servers to accommodate all the users at Harvard—a group that now includes about 7,000 students and 2,500 alumni.

"We originally just released it thinking it was a fun project," says Mr. Hughes. "But so many people signed up so quickly we were blown away." (Mr. Zuckerberg de-
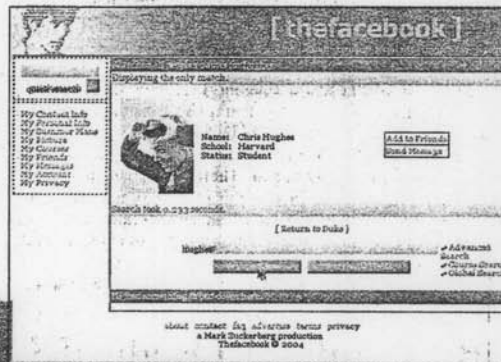
[thefacebook]

Mark Zuckerberg and Chris Hughes, both sophomores at Harvard U., have started a student craze with Thefacebook (above), an online social network.

RICK FRIEDMAN FOR THE CHRONICLE

That logic has been taken a step further by a similar site at Wesleyan University, called WesMatch, that focuses on making love connections. The service, which requires students to fill out a humorous questionnaire and then translates the results into compatibility rankings, was founded by a pair of Wesleyan students more than two years ago. But only in the past year has it become a campus craze. Now almost all students on the campus—2,500 out of 2,700—have set up WesMatch profiles. The Web site was recently copied at four institutions, including Williams College, where some 1,700 students have signed up.

"WesMatch really has become a community thing," says Dan Stillman, one of the site's developers. "It's a way of taking dating and making it into something less serious that people can laugh about, and I think people kind of like that."

He and Mr. Hughes agree that the principle behind the popularity of their sites is simple: The networks make meeting people seem like a casual process. "There's an

just a curiosity; it's "an extraordinary research opportunity." The professor's work applies principles of social networks to the science of computer programming—a combination of themes that academics have only recently started to explore, he says.

Friendster and Thefacebook, he argues, bring something to his field that researchers have never had before: hard evidence. "Traditionally the only way to get empirical data on social networking was to bring a notebook to the bar," he says. "With the Internet, it's finally possible to measure social activity." For Mr. Kearns, that means having his students study their profiles to see whom they link to and what they do online.

In "Networked Life," a course he teaches about the social aspects of computer networks, Mr. Kearns asked students like Ms. Sacerdote and Mr. Evans to create their own Friendster profiles. He then encouraged them to look up

JIM GRAHAM FOR THE CHRONICLE

The U. of Pennsylvania's Michael Kearns: "With the Internet, it's finally possible to measure social activity."

nication augments real-life encounters for most of us."

The creators of Thefacebook are hoping their captive audiences can help them turn the service into a profitable business. Last month the site made its first foray into advertising, running a series of announcements for local events at Harvard. And Mr. Hughes says the site's creators are weighing offers from a few advertising firms, which, he says could help subsidize the cost of the network—now more than $1,000.

But beyond a few small advertisers, it remains to be seen whether Thefacebook can be a money maker, says Mr. Kearns. He argues that the service will not be a long-term hit with students and investors unless its creators more clearly define its audience. "In a year or two, is it going to be a network for alumni? Is it going to be a dating service?" he asks. "I think the site needs to develop a function that e-mail and course Web sites can't duplicate."

Mr. Hughes says Thefacebook will answer those questions in the summer, by bringing the service to more than 100 colleges and introducing new features. He declined to describe those features but said they would "bring social networking to the next level."

For the time being, he says, the service's popularity is accomplishment enough.

"Even though it's 80 degrees and sunny, there are still 200 people logged in to the site from Harvard right now," he says. "That's something else."

"I like the fact that it decreases the perceived size of the university by showing how people are connected to one another."

awkwardness if you meet someone at a party and ask them to dinner on a social-networking site," says Mr. Hughes. "But I think if you do the same thing through e-mail, it's worse. The reaction would be more like 'Who is this kid, and what is he doing?'"

RESEARCH OPPORTUNITY

Other students say Thefacebook makes the Web, and their universities, seem more manageable by representing them as simple sets of social connections. "I like the fact that it decreases the perceived size of the university by showing how people are connected to one another," says Joshua Evans, a student at Penn who considers himself a devotee of Thefacebook.

Mr. Kearns, the Penn professor, decided to investigate Thefacebook when his students gave it the highest praise an online social network can get: Because it has no noncollegiate users, it's "better than Friendster."

For Mr. Kearns, the rise of such sites isn't

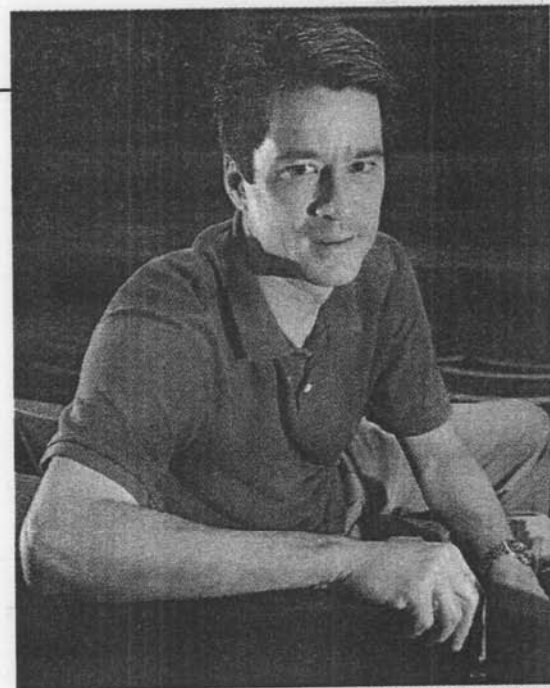their peers' profiles online, and watched to see who linked to whom.

Mr. Kearns says the exercise helps him demonstrate concepts like "preferential attachment," which states that in most networks, a small percentage of people will be somehow linked to almost all of their peers. "We can graph the number of connections everyone on a network has," he says, "and it shows that the rich get richer."

His students "definitely get it," he says. "They can talk about network properties broadly or specifically because they've lived with technology growing up, and they've lived with it in college."

ONLINE ENCOUNTERS

College students, in other words, expect to mediate their meetings in the flesh with contacts in the digital world.

Nearly every student talks regularly with friends using e-mail and instant-messaging systems, says Albert Ip, another of Mr. Kearns's students. "I think online commu-