It turns out your parents were right all along: You really can be judged by the company you keep.

Or at least the company you keep on Facebook, according to an MIT experiment on social network analysis and privacy.

For a class on ethics and law in the electronic frontier, two MIT students tried to determine what kinds of information members of social networks were revealing indirectly.

Using a software program they created called "Gaydar," Carter Jernigan and Behram Mistree (who have since graduated) analyzed the gender and sexuality of a person's friends to predict that person's sexual orientation.

They weren't able to verify all of the software's predictions, but based on what they knew about their classmates' offline lives, they found that the program seemed to accurately identify the sexual orientation of male users, in a sense indirectly "outing" them by analyzing the characteristics of their online "friends."

The findings have not been published but, in an e-mail, Mistree said the pair has a paper in submission to a journal. Aside from stating that "We thought that our work demonstrated a new threat to privacy that we wanted individuals to be aware of," he declined to comment.

Jernigan did not immediately respond to requests for comment from ABCNews.com, but he told the Boston Globe, "It's just one example of how information could be inadvertently shared. It does highlight risks out there."

On Social Networks, Information About You Isn't Only About You

Hal Abelson, the MIT computer science professor who taught the researchers' class, said that while the students couldn't execute the project up to rigorous scientific standards because of classroom limitations, the research still highlights the fact that social networking indirectly exposes a large amount of personal information.

"The whole notion that your information is just about you -- that isn't true..."
anymore,” Abelson said, adding that the project shows that that policy makers and companies need to adjust how they think about how individuals control privacy online.

"The point is when the information is so interconnected, information about me isn't just about me," he said.

Even if a user goes to great pains to withhold personal information (by changing default settings, refusing to post political or religious affiliations or sexual orientation, or refraining from posting photos), he said information on a friend's page -- or even just the friend list itself -- could lead others to make assumptions or draw inferences.

'Gaydar' Predicts Sexual Orientation Based on Friend Links

For their project, which they began in 2007, Carter and Jernigan accessed Facebook information for students in the MIT network and were in classes 2007-2011 or graduate students, according to the Boston Globe.

First, they analyzed the friend links of 1,544 men who identified as straight, 21 who said they were bisexual and 33 who said they were gay to determine correlations between a user's sexual orientation and that of his friends. They found that gay men had proportionally more gay friends, which gave the computer program a way to predict sexual orientation based on friends.

Armed with that information, they had the program analyze the friend links of 947 other men who did not disclose their sexuality. The students couldn't scientifically verify the predictions made by the program, but based on their personal knowledge of 10 people in the sample who were gay but did not say so on Facebook, they concluded that the program appeared to accurately identify gay men.

It was not as successful in identifying bisexual men or women or lesbians.

Social Network Analysis Is a Growing Field

Computer science experts say "Gaydar" is just one of a growing number of projects to mine social networks and relationships between people for potentially valuable, but personal, information.

"Social network analysis has been a field, in general, that has been around for a while. What has changed recently is the availability of the social networks," said Murat Kantarcioğlu, assistant professor of computer science at the University of Texas at Dallas. Now that hundreds of millions of people have accounts with online networks, such as Facebook, sample sets and research potential have expanded, he said.

Earlier this year, he and a student who now works for Facebook, published their own findings on social network analysis. In 2007, they collected and analyzed more than 167,000 profiles in the Dallas/Fort Worth to predict political affiliation.

They found that certain bits of information, such as group memberships or favorite movies, were more predictive than others.

"I think this is just the start," he said. For marketing purposes, he said companies are already trying to discern as much as they can from the pieces of information revealed online.
Next Step: Integrating Social Networks With Other Data Streams

The next step is integrating information on social networks with other data streams, such as medical records, credit card information or search engine histories, Kantarcioglu said.

Though it’s far-fetched now, he said in the future, insurance companies could even analyze social networks to predict health risks.

For example, there are some studies that a person’s family and friends can be indicative of the person’s habits can. Hypothetically speaking, an insurance company could look at photos of family members and friends on a user’s Facebook page and draw inferences about that user’s eating habits.

By combining a person’s medical history with anecdotal information about their friends gleaned from Facebook, insurers could try to calculate risk.

But while the MIT researchers say their project highlights privacy risks, others who research social networks caution that people shouldn’t read too much into this.

“What these guys have done is nothing new. We commonly make judgments about people based on their acquaintances,” said Jason Kaufman, a research fellow at Harvard University’s Berkman Center for Internet & Society. “What they’ve really done is throw sophisticated computer software and data at a problem like this.”

He also emphasized that private firms are already accessing streams of data, such as credit card and prescription data, without authorization.

Gleaning Cues Is Part of Being Social

Judith Donath, director of the Sociable Media research group at the MIT Media Lab and a faculty fellow at Berkman, took an even more optimistic view of the “Gaydar” project’s findings.

"Part of what makes the world social is that we do glean clues,” she said. "It's a sign that we're finally making a network in which people are more than isolated bits."

Just as in real life, some of the inferences and assumptions people draw from indirect online clues will be false. But she said totally blocking information online would be like "A crowd in which everyone walked around in a giant paper bag from head to foot. They would have privacy, but it would be very boring."

And she said that as people learn about the risks and benefits of maintaining an online life, they’re adjusting their behavior and learning how to control their online personas. Some use tools that block personal information, others opt out of social networks altogether.

Even though “Gaydar” was able to accurately identify some gay men, it doesn’t necessarily mean this program or others would be able to identify those who choose to be most discreet, she said.

"I think part of it is how willing people are to make ambiguous statements about themselves,” she said. "In any place, there's a wide range in how people deal with the trade-offs between public and private.”
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