Chair’s Perspective

This year we experienced a surge of new students at both the undergraduate and master’s level. In addition to the vitality this brings to the department – virtually every square foot of our new building, Levine Hall, buzzes with activity into the wee hours of the night – this has enabled us to open a search for new faculty. We are delighted that Benedict Brown joined us in time for the spring semester to take charge of our introductory programming course (CIS 110), and that Linh Thi Xuan Phan has just joined us as an Assistant Research Professor associated with the Precise Center. We are hoping to see several other additions in the fall, so stay tuned!

We are also pleased to announce that Ben Taskar was awarded tenure this spring! A star researcher in machine learning with expertise in structured prediction and weakly supervised learning, over the past five years Ben co-founded the Penn Research in Machine Learning (PRiML) center with Sasha Rachlin (Statistics, Wharton) and created a summer undergraduate research program within CIS.

In this issue we focus on the database group, several of whose members are pictured above. Over the past three decades, the group has had a major impact on database theory, bioinformatics, and database programming languages, and has now expanded to include distributed systems and networking. Graduates of the database group can be found on every continent except Australia (and Antarctica). The group has also achieved remarkable gender equity – roughly 50% of its members are women.

Our undergraduates continue to amaze us with their creativity. We feature what the “Dining Philosophers” are up to (a lot more than just eating!) as well as two initiatives by the Women in Computer Science (WICS): a new residential program for women, and an outreach day for high school girls.

Alums, we are proud of you too! Stay in touch by giving us updates through Facebook, or volunteering for one of our Alumni activities. Contact Jackie Caliman for details: jackie@cis.upenn.edu.

Read on to hear more about Penn CIS, and check us out on Facebook!
http://www.facebook.com/CISatPenn

Susan B. Davidson
Weiss Professor and Chair, Computer and Information Science Department
The Database Group at Penn

Roots
The Database Group was founded in the 1980’s by Peter Buneman, Susan Davidson and Val Tannen. During this period, the database community as a whole was primarily focused on relational data. In contrast, the early work of the group centered on database programming languages, semistructured data, XML, and database integration, and had a strong impact on database theory and practice. Work on XML influenced the XQuery and XML Schema standards, and work on database integration resulted in the Kleisli Query System (named after a category theorist, upon whose principles the language was designed). The Kleisli work was commercialized by GeneticXchange, Inc., and deployed in a number of large pharmaceutical companies.

In the 1990’s, the group became known not only for its contributions to database theory but for its connections to bioinformatics. Collaborations between the Database Group and faculty in Genetics (Chris Overton) and Biology (Warren Ewens) resulted in the formation of the Penn Center for Bioinformatics in 1997.

Evolution
In 2002, the group experienced a sea change: Peter Buneman left Penn to create a database group at the University of Edinburgh, hiring Penn Database Group alumni Wenfei Fan and Leonid Libkin, and arguably creating the strongest database group in Europe; and Zack Ives joined Penn, adding a strong new dimension of distributed systems. Boon Thau Loo then joined in 2006, expanding the group’s expertise to include projects at the intersection of networking and databases. The group also grew to include Sudipto Guha (2001) and Sanjeev Khanna (1999), who do work at the intersection of algorithms and databases. The group is highly collaborative, drawing on CIS expertise in programming languages (Benjamin Pierce and Steve Zdancewic), machine learning (adjunct professor Fernando Pereira), formal methods (Rajeev Alur), embedded systems (Insup Lee), distributed systems (Andreas Haeberlen), and security (Andre Scedrov).

Some Projects
The Orchestra project, led by Ives, focuses on the problem of collaborative data sharing: letting multiple organizations integrate and exchange data and updates to that data – even when the various database owners have different schemas and different ideas of what is the “right” content. Such situations are exemplified by community-wide data sharing within the sciences. Technical developments include techniques to map data and updates among different sites, maintain and query data provenance, and use the data provenance as the basis of assessing trust and ultimately to resolve conflicts. The system has been used in a number of biological data sharing applications, in particular in the IEEG Web Portal, which enables cloud-hosted science for epileptic seizure prediction.

Provenance Through Workflows and Databases
The provenance of data has been independently studied in the workflow and database (with pioneering work by Buneman, Tan and Khanna) communities. The project pulls together Davidson’s expertise in workflow (“coarse-grained”) provenance and Tannen’s expertise in database (“fine-grained”) provenance (also contributed to Orchestra). As scientific and business applications are in need of both kinds of provenance information, the group has recently worked on synthesizing the two by using database-style descriptions of workflow module behavior (the Lipst stick system).

NetTrails, led by Loo, focuses on the problem that operators of distributed systems often find themselves needing to answer forensic questions to perform a variety of managerial tasks, including fault detection, system debugging, accountability enforcement, and attack analysis. NetTrails is a novel provenance-based approach that provides the fundamental functionality required for answering such forensic questions -- the capability to “explain” the existence (or change) of a certain distributed state at a given time in a potentially adversarial environment. The NetTrails project makes several contributions, including distributed provenance maintenance and querying techniques, secure tamper-evident provenance support in dynamic and adversarial environments, and a visualization toolkit that allows users to perform analysis on their distributed systems in an interactive manner. NetTrails has been used for analyzing a wide range of distributed systems, ranging from declarative networks, the Quagga software router, Hadoop MapReduce and Distributed Hash Tables.

New book by Zack Ives!
How do you approach answering queries when your data is stored in multiple databases that were designed independently by different people? This comprehensive new book on data integration is written by three of the most respected experts in the field, AnHai Doan, Alon Levy and our own Zack Ives.

Peter Buneman (PhD in mathematics, University of Warwick, 1970; co-founder DB Group at Penn) was a professor at Penn for more than two decades before moving to Edinburgh University in 2002. He is co-founder and Associate Director of Research of the UK Digital Curation Center, fellow of the ACM, fellow of the Royal Society, fellow of the Royal Society of Edinburgh, and won a Royal Society Wolfson Research Merit Award.
**Spotlight on PhD Alumni of the Database Group**

**Limsoon Wong**'s dissertation addressed a series of fundamental research problems and engineering issues in developing the Kleisli Query System for broad-scale integration. Kleisli was then used to solve a series of bioinformatics data integration problems considered to be “impossible” by the US Department of Energy. For this work, he was awarded the 1994 SEAS Rubinoff Award. Dr. Wong’s subsequent research in developing and applying data mining technologies to biology and medicine resulted in treatment optimization of childhood acute lymphoblastic leukemia, which won his team the FEER Asian Innovation Gold Award in 2003. He was also awarded the 2006 Singapore Youth Medal of Commendation for his contributions to science and technology.

**Dan Suciu**'s dissertation, studying the design, expressive power and implementation of parallel programming languages for collections, was awarded the 1995 SEAS Rubinoff Award. After graduating from Penn, Dan spent five years at AT&T Labs before joining the University of Washington in 2000. His research is in data management, with an emphasis on topics that arise from sharing data on the Internet, such as data security, and managing data with uncertainty. He is a co-author of two books, a Fellow of the ACM, holds twelve US patents, received the 2000 ACM SIGMOD Best Paper Award, the 2010 PODS Ten Year Best Paper Award, and received the NSF Career Award and Alfred P. Sloan Fellowship.

**Wang-Chiew Tan**'s research focuses on data provenance and information integration. Recently, she has been investigating techniques for semantically tracking the history of data under multiple dimensions of time. Dr. Tan is also known for her work on the management, design, and understanding of schema mappings, which are semantic specifications at the heart of data integration and exchange systems. She is currently working on a grand challenge project called Splash at IBM Research - Almaden, where the goal is to create a computational framework that facilitates the integration of independently curated data sources and simulation models. Dr. Tan received an NSF CAREER award in 2004, and has won two Best Paper Awards.

**TJ Green**’s dissertation addressed problems related to data provenance and data sharing between independent collaborators. In particular, Dr. Green and his collaborators devised an elegant unifying theoretical framework of data provenance, studied its interaction with fundamental problems in database theory such as query optimization, and developed a practical implementation in a collaborative data sharing system called Orchestra. For this work, TJ was awarded the 2010 SEAS Rubinoff Award, and an honorable mention for the 2011 Jim Gray SIGMOD dissertation award. Dr. Green’s current work is in deductive database systems, a technology that has only recently gained traction in practical settings as a foundation for dramatically simplifying the programming and management of cloud computing systems. Dr. Green received the NSF Career Award in 2011.

**Nick Taylor**’s thesis work focused on the design and implementation of a reliable, fault-tolerant peer-to-peer database. This work was done in the context of the Orchestra data sharing system, a collaboration with other faculty and students in the database research group. Now a software engineer at Google’s New York office, he works to improve the performance and reliability of BigTable, a massively parallel database that underlies many Google products, including Gmail, Google Maps, Orkut, and YouTube.

**Did you know?**

Although the Database Research Group was formed in the 1980’s, it has intellectual roots dating much earlier. David Lomet, a highly respected member of the database community who has worked as a researcher at IBM, DEC and Microsoft, and was a Professor at the Wang Institute, graduated from Penn in 1969. Dr. Lomet’s work in database systems has focused on access methods, concurrency control and recovery; he is known as one of the inventors of the transaction concept. His recent research extends these ideas to new platforms such as the cloud, multi-core, and flash storage. Dr. Lomet has published over 100 papers, received two SIGMOD “Best Paper” awards, and has over 45 patents. He has been editor-in-chief of the Data Engineering Bulletin since 1992, and won the 2011 SIGMOD Contributions Award for this. He has also been an editor of ACM TODS and the VLDB Journal, has served on the VLDB Endowment Board and ICDE Steering Committee, and is Chair of the IEEE TC on Data Engineering. Dr. Lomet is a Fellow of AAAS, ACM, and IEEE.
**Database Group PhD Alumni**

- Tom Myers (1980), Software Developer, author and consultant (Buneman)
- Amihai Motro (1981), Professor, George Mason University, Fairfax, VA (Buneman)
- Hassan Ait Kaci (1984), Professor, Simon Fraser University, Burnaby, BC, Canada (Buneman)
- Rishyur Nikhil (1984), CTO, Bluespec Inc, Waltham, MA (Buneman)
- Magdi Kamel (1988), Naval Postgraduate School, Monterrey, California (Davidson)
- Atsushi Ohori (1989), Professor, Tohoku University, Sendai, Japan (Buneman, Tannen)
- Victor Fay-Wolfe (1991), Professor, University of Rhode Island (Davidson, Insup Lee)
- Ramesh Subrahmanyan (1992), Financial industry, Chicago (Tannen)
- Aaron Watters (1992), Knewton, Inc (Buneman, Davidson)
- Leonid Libkin (1994), Professor, University of Edinburgh (Buneman)
- Limsoong Wong (1994), Professor, National University of Singapore (Buneman)
- Anthony Kosky (1995), Group Leader, Joint Genome Institute, Walnut Creek (Buneman, Davidson)
- Dan Suciu (1995), Professor, University of Washington, Seattle (Tannen)
- Hanene Ben-Abdellah (1996), Université de Sfax, Tunisia (Davidson, Insup Lee)
- Wenfei Fan (1999), Professor, University of Edinburgh (Buneman)
- Lucian Popa (2000), Senior member of tech staff, IBM Almaden Research Center (Tannen)
- Arnaud Sahuguet (2001), Product manager, Google, New York (Tannen)
- Alin Deutch (2002), Associate Professor, University of California, San Diego (Tannen)
- Wang-Chiew Tan (2002), Associate Professor, University of California, Santa Cruz (Buneman, Khanna)
- Vanessa Braganhola (2004), Professor, Fluminense Federal University, Brazil (Davidson, Carlos Heuser): Not Penn PhD, but visited
- Carmem Hara (2004), Universidade Federal do Parana (Davidson, Wenfei Fan)
- Yi Chen (2005), Associate Professor, Arizona State University (Davidson)
- Byron Choi (2006), Assistant Professor, Hong Kong Baptist University (Buneman)
- Yifeng Zheng (2006), Digital Life LLC (Davidson)
- Grigoris Karvounarakis (2009), LogicBlox, Atlanta (Ives, Tannen)
- Todd J. Green (2009), Assistant Professor, UC Davis (Ives, Tannen), UC Davis and LogicBlox
- Nicholas Taylor (2010), Google Inc (Ives)
- Partha Pratim Talukdar (2010), CMU postdoc (Ives, Fernando Pereira and Mark Liberman)

**Postdoctoral Researchers**

- Zoe Lacroix (1998), Associate Research Professor, Arizona State University (Buneman, Davidson, Tannen)
- Sarah Cohen-Boulakia (2007), Assistant Professor, Université Paris-Sud, France (Davidson)
- Anat Eyal (2008), EMC (Davidson)
- Vittorio Perduca, Postdoc (2010), University of Paris (Tannen)
- Soeren Auer (2008), University of Leipzig (Ives)
- Daniel Deutch (2011), Assistant Professor, Ben-Gurion University, Israel (Tannen)

**WICS High School Day for Girls**

On April 20th, CIS hosted 94 high school girls for a day to show them what computer science is and the opportunities available for those who major in the discipline. The students met faculty and current Women in Computer Science (WICS) students, toured world-class labs, attended a class taught by CIS faculty, and learned about “dream” jobs and internships in computing.

Above left: Professor Stephanie Weirich welcomes the girls and describes what computer scientists do.

Above: Professor Norm Badler shows what his Digital Media Design students create in the SIG Lab.

Left: Professor Chris Murphy engages students with Logical Puzzles.

Above left: Professor Max Mintz shows the students how computing helped the allies win WWII. Above right: Professor Andre DeHon demonstrates the technology & Big Ideas behind your MP3 player & cell phone.
Faculty News

Facility Awards & Notable Grants

Congratulations to Ben Taskar, Magerman Term Associate Professor, who was awarded tenure this spring.

Kostas Daniilidis has been elected an IEEE Fellow for “contributions to visual motion analysis, omni-directional vision, and three-dimensional robot vision.”

Susan Davidson has been invited to be a member of the Computer Community Consortium (CCC) Council, a subcommittee of the Computing Resources Association (CRA), to which she was elected in 2011.

Aravind Joshi has been named a Fellow of the Association for Computational Linguistics (ACL) for his “significant contributions to the mathematics of natural language and for the development of TAGs (tree adjoining grammars).”

Mitch Marcus has been named a Fellow of the Association for Computational Linguistics (ACL) for his “significant contributions to deterministic parsing and the Penn Treebank.”

Boon Thau Loo is the recipient of a 2012 Young Investigator Award from the Air Force Office of Scientific Research (AFOSR) for his proposal, “A Unified Algebraic and Logic-based Framework towards Safe Routing Implementations.”

CJ Taylor is the recipient of the 2012 Christian R. and Mary F. Lindback Award for Distinguished Teaching.

Rahul Mangharam (ESE; secondary appointment in CIS) has been selected to present his paper, “Automotive Architectures 20/20: From Electric Vehicles to Networked Vehicles,” at the National Academy of Engineering (NAE) US Frontiers of Engineering Symposium.

Michael Kearns was elected to the 2012 Class of the American Academy of Arts & Sciences.

PRECISE Researchers Rajeev Alur, Ashutosh Trivedi, and Dominik Wojtczak won the best paper award for their work titled “Optimal scheduling for constant-rate multi-mode systems” at the 15th Conference on Hybrid Systems (HSCC) at 2012 Cyber-Physical Systems Week in Beijing.

Alur Wins $10M NSF Grant

Anyone who has used a computer can attest to the massive strides software has made over the last few decades. But those on the programming side—the people who create computer software—have had a different experience. “What it means to ‘code’ hasn’t changed much in the last 20 to 30 years,” said Rajeev Alur, Zisman Family Professor of Computer and Information Science. “It’s still done by expert programmers and is quite time-consuming, expensive, and error-prone.”

Alur is aiming to simplify computer programming with a five-year, $10 million project funded by the National Science Foundation’s (NSF) Expeditions in Computing program. The project is dubbed “ExCAPE” for Expeditions in Computer Augmented Program Engineering. Alur will lead a team of researchers from Penn and eight other institutions in a quest to make computer programming faster, easier, and more intuitive. The Penn contingent includes CIS professors Milo Martin, Boon Thau Loo, and Steve Zdancewic, and ESE/CIS professor George Pappas.

The Expeditions in Computing program is the NSF’s largest investment in computer science, funding the most ambitious and far-reaching research in the field. Penn is also a partner in another $10 million Expeditions project announced this year. ESE/CIS professors Vijay Kumar and Andre DeHon, and CIS professors Sanjeev Khanna and Insup Lee will join researchers at the Massachusetts Institute of Technology and Harvard University in developing a new way to design and build robots. These robots have bodies that are printed on flat sheets of material and folded together, making them highly flexible and customizable.

Article Excerpted from The Penn Current, Evan Lerner

CIS welcomes Assistant Research Professor Linh Thi Xuan Phan. Dr. Phan received her PhD from the National University of Singapore in 2009. She works in the Precise Center on research in real-time embedded systems, cyber physical systems, and cloud computing.

CIS welcomes Lecturer Benedict Brown. Dr. Brown is teaching our introductory programming course for majors and non-majors, CIS 110. He received his Ph.D. from Princeton University in 2008, and then completed a postdoc in computer graphics and computer vision at KU Leuven in Belgium.
Dining Philosophers Stepping Up

Dorm is a four-letter word rarely used at Penn. That’s because the University’s 11 College Houses are more than residential halls for socializing, studying and sleeping. They’re academic hubs, too.

At Penn, students can apply to live at a College House and participate in one of 40 different themed residential programs offered to undergraduates. From the study of Infectious Diseases at Ware to the Arts House at Harnwell, communities of interest draw students to live on designated floors or clusters of rooms within a House. This fall, when Penn’s Office of College Houses & Academic Services invited students to submit proposals for themed residential programs, Gaby Moreno-Cesar, a junior and Co-President of Women in Computer Science (WICS), and sophomore Trisha Kothari proposed the Women in Computer Science Residential Program for Kings Court English College House.

Moreno-Cesar and Kothari’s goal is to provide women computer science students a nurturing environment. “We want to empower them with workshops, mentoring, faculty dinners, field trips and each other’s ideas,” Moreno-Cesar said. Research on underrepresentation shows that peer interaction within the major is the single largest determinant of persistence for women in computing. Although the computer science major at Penn is 26 percent women, Penn’s computer science undergraduate program has nearly double the average percentage of women in the top 100 research universities.

Applications for the Women in Computer Science Residential Program will be accepted through July. The community will be composed of all class years from freshmen through seniors. This program will provide residents with opportunities to study together and enjoy social coding as well as activities such as web development, android development, Linux, and program partnerships with the Dining Philosophers, the WICS student organization, Weiss Tech House, and the Women’s Center.

Excerpted in part from “Communities of Thought,” Jacquie Posey, Penn News

The WICS Residential Program — A Community of Thought

To become an expert software engineer, a student needs to “practice, practice, practice coding.” This advice has often been dispensed to Penn’s Computer Science student club, the Dining Philosophers (DP), by their faculty advisor, Professor Max Mintz, and the DP has risen to the challenge.

In recent years, the club has become famous for the annual Penn Apps Hackathon, 48 sleep deprived hours of computer coding on a weekend in January. Broken into teams of four, student participants are tasked with building a computer program or app from scratch. According to DP President, Pulak Mittal, “the point of the hackathon is to spend a weekend just building something, doing something new.”

The DP also holds regular coding events throughout the academic year. At Code@Night on Wednesdays, CIS students hang out and practice coding with peers, or benefit from a tech talk or tech tutorial as well. The annual Snakeathon is a coding contest where students work on writing the best AI for a competitive version of the simple game “Snake.” The Hacker Trails are a series of talks intended to give students with little to no background in web development an introduction to web programming.

In addition to giving students the opportunity to sharpen their coding skills, the DP promotes networking, camaraderie and fun. Through field games, such as CIS Assassins, computer science students get to know each other better; through Tea Chats and monthly dinners, students interact with faculty outside of class; and through the annual PCclassic programming contest, undergraduates reach out and encourage high school students to pursue computing.

To find out more about the DP, see http://www.dp.seas.upenn.edu/

Excerpted in part from “Communities of Thought,” Jacquie Posey, Penn News

About Our Alumni

Alumni Spotlights

David Friedman’s (CSE’99, MSE’00) startup Inhabi is a web company that intelligently matches renters and landlords (think eHarmony for the rental market). Inhabi’s platform employs a matching algorithm based on principles and techniques that Friedman learned in Lyle Ungar’s machine learning class. Today’s online apartment listings are merely digitized versions of the newspaper classifieds, resulting in noise for renters and confusion for landlords. Inhabi matches renters’ requirements with apartments that are the best-fit for them, an application which is part of a larger trend in consumer software.

Michael Volodarsky (CSE’03) recently launched LeanServer, a Philadelphia based hi-tech startup that provides expert technology for massively scalable web applications. Marvin Li CSE’02, founding VEO team member credited with building and scaling a large trafficked music service, joined Volodarsky last fall to build a brand new service for application performance monitoring in the cloud, codenamed “Sentinel.” Volodarsky and Li saw an opportunity to leverage the power of the cloud to help developers and IT people everywhere quickly solve their application transparency problems and improve performance of high volumes of production data. “Sentinel” went into beta last week and is slated to publicly launch later this year.

Tushar Vashisht (ASC’S07) left Deutsche Bank in 2010 and joined the Indian government’s tech wing of its Unique ID Authority (Indian equivalent of the social security system) to work in the social impact space. In 2011, Vashisht conducted a social experiment with his friend from MIT. The two lived with the homeless of Bangalore for one month on just 100 rupees ($2.04) a day. Their goal—to collect insights to inform government social policy on what it means to be Indian and poor. Last fall, Vashisht launched Caeruz Ventures (Caeruz.com), in the online health/wellness space, and a blog on the experiment (rs100aday.com). At Penn, Vashisht sang with Penn Masala. Watch for his new album this year.

Yiyi Zhou (DMD’11), a Program Manager for the Windows Store, is responsible for ensuring that you can easily browse and search for Windows 8 apps. Zhou’s team looks at bugs and design change requests to determine the right path moving forward. Do we want to change this feature? What do our users want to see added? Windows 8 Consumer Preview was released recently and Zhou is eager to hear feedback from users on the Windows Store utility.

Student Awards

Matthew Croop is the winner of the Computer Science Academic Award, for excelling in Computer Science coursework, well beyond the requirement for the degree.

Trisha Kothari was awarded a 2012-2013 Microsoft Scholarship for her impressive academic record and strong interest in making contributions to the software industry.

Albert Kwon is a winner of the E. Stuart Eichert Jr. Memorial Prize, awarded to select juniors who best demonstrate initiative, intellectual attainment, and commitment to the professional practice of engineering.

Pulak Mittal is co-winner of the Manfred Altman Memorial Award, given annually to the freshman or sophomore in engineering who has best demonstrated initiative, innovation, and ingenuity in his or her studies.

Connie Ho, Nicholas Meyer, Gaby Moreno-Cesar and Ayaka Nonaka are the winners of the CIS Faculty Appreciation/Penn Engineering Exceptional Service Award, recognizing outstanding students for their service to the University.

Eric Berdinas and Jeff Kiske. Computer Engineering Juniors won the Intel Innovators Competition along with a $50,000 prize.

Sam Panzer is co-winner of the Walter Korn Award, given to the outstanding senior who is continuing on for a graduate degree.

Kaitin Pollock is the winner of the Dawn and Welton Beckett Digital Media Design Achievement Award, which is given to the senior who exemplifies the ideals of the DMD program through outstanding achievement, citizenship, and mentoring. Kaitin also won Honorable Mention in the Computing Research Association’s Outstanding Undergraduate Researcher Award competition for 2012.

Seth Shannin was awarded the Hugo Otto Wolf Memorial Prize for the senior, who by the thoroughness and originality of his or her work, meets with the greatest approval of the professors in charge.

Nicholas Watson was awarded the Albert P. Godsho Engineering Prize for having displayed the best grasp of the mathematical principles underlying the profession of engineering.

Kevin Xu is co-winner of the John Brainerd Award, honoring the character, scholarship, professional attitude and broad interests required of the modern engineer.

Zack Zarrow is co-winner of the Cwikla Award for demonstrating the greatest overall improvement in scholastic attainment and character development since matriculation as a freshman.

Congratulations to Alexander Shoulson, PhD student advised by Norm Badler, and Mabel Zhang, PhD Student advised by Kostas Daniilidis, for receiving honorable mentions in this year’s NSF Graduate Fellowship.

Alex Kulesza is the winner of the Rubinoff Award for a thesis that “could lead to innovative applications of computer technology”. He was nominated by Ben Taskar and the thesis title is “Learning with Determinantal Point Processes”.

The Best Student Paper Award for the 18th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS) went to Miroslav Pajic for his paper entitled “From Verification to Implementation: A Model Translation Tool and a Pacemaker Case Study.”

Keep in touch and stay involved with Penn! Contact Jackie Caliman at jackie@cis.upenn.edu.
Penn doctoral candidate Sandy Clark (right) and lab director Matt Blaze with the two-way radios they found lacking security. (CLEM MURRAY / Inquirer Staff Photographer)

When a team of University of Pennsylvania computer scientists set out to test the security of the encrypted two-way radios widely used by federal agents, they were in for an unnerving surprise: for a small but significant part of the time, the radio traffic was not even encrypted.

All they had to do was turn on a store-bought receiver and they could hear agents discussing the identities of undercover agents and informants, locations of surveillance targets, and other sensitive details, the researchers reported in a study last month.

The researchers, who won an award for their paper at a national conference, are working with law enforcement agencies to alleviate problems through software tweaks and training. Used with permission of Philadelphia Inquirer Copyright© 2012. All rights reserved.