

## HOT RESEARCH

### “Architecting” a Bridge between Research and Practice

Academic research is often overlooked as a viable resource for today’s real world industry applications. “Impractical! Irrelevant! Too hard to adopt!” are just some of the negative refrains discouraging industry from pursuing relationships with academia. Yet, ISR has proven time and again that technology transfer can be practical, mutually rewarding and of great value to society. In his “Message from the Director” (see p. 2), Professor **Richard N. Taylor** gives examples of past successful adoption of ISR technologies, many of which hold continuing widespread value to us all. In this article, we focus on one dynamic ISR-to-industry technology transfer arena—software development and maintenance—and show its great potential.



André van der Hoek, Richard N. Taylor, John Georgas

The development of complex software systems is difficult, expensive, and prone to failure. Current industry state-of-the-practice techniques in software design tend to be either too abstract (box-and-arrow diagrams with little rigor) or too concrete (UML diagrams where many implementation details of the system are already chosen). ISR’s software architecture research helps software engineers make, codify and maintain good design decisions throughout a software system’s lifetime, thereby avoiding current development pitfalls inherent in these two extremes.

ISR software architecture technologies allow

## RESEARCH BRIEFS

**André van der Hoek** presented two papers at the Silver Anniversary meeting of the International Conference on Software Engineering (ICSE) held in Portland, Oregon, May 3-11, 2003. Coauthors of the papers included two of his graduate students, **Anita Sarma** on “Palantir: Raising Awareness among Configuration Management Workspaces” and **Emily Oh Navarro** on “Problems and Programmers: An Educational Software Engineering Card Game.”



Anita Sarma

Emily Oh Navarro

<http://www.ics.uci.edu/~andre/research/publications.html>

Five of the 25 papers presented at the 3rd Workshop on Open Source Software Engineering, held in conjunction with ICSE 2003, are authored or coauthored by ISR researchers: **Walt Scacchi**, **Chris Jensen** (W. Scacchi, advisor), **Margaret Elliott**, and **Justin Erenkrantz** (R. Taylor, advisor). ISR’s productivity far exceeded that of CMU and Osaka University (Japan), tied for second place with two open source papers each. Online proceedings of the conference can be found at: <http://opensource.ucc.ie/icse2003/Preliminary-3rd-OSS-Workshop-Proceedings.pdf>

**Crista Lopes’** presentation on Aspect Oriented Programming (AOP), given to the Computer Science Division at The Aerospace Corporation in January, has resulted in a collaborative effort with Aerospace engineers, who are applying AOP technologies to the development of a powerful software diagnosis tool. She and **Phillip Schmidt** of The Aerospace Corporation will discuss this partnership effort at the 2003 ISR Research Forum. See *Focus on Sponsors*, page 5, *Schedule of Events*, page 7, and *2003 Research Forum*, page 8.

**Alfonso Fuggetta**, Full Professor of Software Engineering at Politecnico di Milano, Director of CEFRIEL (Education and Research Center on Information Technology) and ISR faculty member, will be visiting ISR during the month of August, 2003. He will be collaborating with **Richard Taylor**, **André van der Hoek**, and **Rohit Khare** (R. Taylor, advisor) on decentralized software design research.

software engineers to specify and reason about system design at the level of components and their interactions, filling the gap between high-level systems engineering and subsequent low-level implementations. Architecture can thereby facilitate software development by serving as the basis for tradeoff analysis, rapid prototyping, product

family engineering, implementation, and post-implementation adaptation. Finding problems and evaluating tradeoffs in advance of implementation can save millions of dollars and months of effort in large software engineering projects, and can often make the difference between a successful project and a failed one.

These potential cost and time savings have attracted several industrial development organizations to ISR’s architecture technologies. With the help of ISR Graduate Student **John Georgas**, NASA’s Jet Propulsion Laboratory (JPL) evaluated, then incorporated ISR’s architecture notations and tools into its development process for the upcoming Mars Smart Lander mission. Inspired by this success, and converging with ongoing ISR collaborations with The Aerospace

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Corporation (*see story, page 5*), JPL, The Aerospace Corporation, Semantic Designs, Inc., and The MathWorks, Inc., are pursuing an unprecedented partnership with ISR Professors Richard Taylor and **André van der Hoek**, investigating the applicability and utility of software architecture-based techniques in the space domain.

Addressing the challenges of transitioning ISR's research technologies into these organizations will ground the research in a realistic domain that is representative of complex software projects ranging from complex management events (e.g., large scale electric power generation, military maneuvers, and factory automation) to mass market software applications (e.g., consumer electronics and mobile computing).

Tradeoff analysis during the design phase of software development is important across domains, but it is especially important in the space domain. Space systems, especially flight systems, must be developed within tight constraints for memory, execution time, fault tolerance, power consumption, and so on. Within these constraints lie numerous tradeoffs. For instance, a redundant component that is more fault-tolerant may also consume more power and memory. Being able to explore and analyze these tradeoffs before component implementations are created is a critical task, but has been largely manual (and therefore costly) in development environments. In contrast, ISR technologies express component properties at the architectural level. Combining these descriptions with automated code generators to generate skeleton or simulated implementations of the components allows rapid prototyping and early analysis, thus identifying and correcting problems efficiently before they are buried in the developing system.

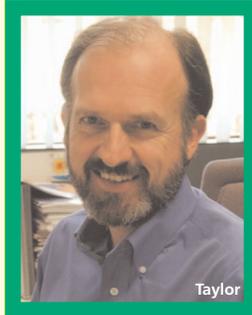
The space domain is also a more rigorous test of ISR's product line architecture technologies, as managing the myriad critical variables, tradeoffs and design decisions is a daunting task in this domain. Traditionally, product-line architecture techniques have been used to manage variation points within a family of related products. With ISR's tools and notations, architecture technologies can be leveraged to express and manage decision-making alternatives, providing the cornerstone for effective and efficient development of software product families over time.

ISR's architecture technologies are open-source and available now from our Web site. We are always eager to assist new partners in integrating software architecture technol-

## MESSAGE FROM THE DIRECTOR

### Partnering with Industry - Success stories

Here at ISR, we don't just talk about partnerships with industry. We have an extensive track record of highly successful partnerships leading to technology innovations that enjoy wide industry application. We told you about a recent successful partnership — the NSF ITR project exploring the relationship between distributed organizations and software — in our last *Connector*. Let me share some more examples with you.



ISR has played a major role in several highly influential open-source projects. The **Apache Web server** — used by over 60% of public Internet Web sites — was developed by the Apache Group, an open-source project that was led for many years by one of my students. During his time at UCI, **Roy Fielding**, currently Chief Scientist at Day Software, led the development of the **HTTP/1.1 protocol**, contributed to the URI standard, and led the Apache work. Key to the success of Apache and the protocol standards, of course, was the formation of effective partnerships that spanned dozens, if not hun-

dreds, of companies. As Roy puts it, Apache is a prime example of the power of global collaboration for the creation of software.

Another UCI/ISR alumni and student of mine, **Jim Whitehead**, spearheaded the development of the **WebDAV** standard, an enhancement to HTTP that supports collaborative work over the Web. In addition to seeing WebDAV successfully work its way through the IETF standardization process, Jim worked to engage a variety of companies in its development. Today most office software supports the WebDAV protocol, including Microsoft Office. Jim continues to be involved in ISR, as a faculty member at UCSC.

Two companies have been formed around ISR technologies, **Endeavors Technology, Inc.**, and **KnowNow, Inc.** Endeavors, founded by ISR alumnus **Gregory Alan Bolcer**, was acquired by Tadpole Technology PLC in 2000. Endeavors Technology provides multiple products in support of highly distributed collaborative, real-time data solutions, including Magi Enterprise, an ad hoc VPN tool providing secure, two-way document sharing, access, and authoring to or from any Web connected access point using existing software applications. In the same year, graduate student **Rohit Khare** co-founded KnowNow. KnowNow "connects the last mile" with dynamic data distribution software for the Internet. Their LiveData platform enables applications to monitor frequently changing information and deliver immediate updates to Web programs, remote desktops, enterprise systems, and mobile devices. Both companies continue to work with ISR and UCI, serving on advisory boards, hosting student interns, and encouraging their employees to continue their education at UCI.

The impacts of the HTTP/1.1 project and Apache alone are strong testimony to the willingness and ability of ISR to partner with industry to create technologies of widespread value. All ISR faculty and staff continue this tradition today, maintaining and expanding partnerships, sponsoring and contributing to conferences that sustain technical communities, and hosting regular outreach events. ISR's commitment to this is evidenced by the expansion of our staff to include a Corporate Relations Officer, **Dr. Susan J. Knight**.

If you aren't an ISR partner already, we invite you to explore the fruitful possibilities with us. *See pages 4, 5, and 7 for information on sponsors and sponsorship.*

Richard N. Taylor  
Professor and Director

gies into their development practices.

For more information, contact John Georgas

at [jgeorgas@ics.uci.edu](mailto:jgeorgas@ics.uci.edu) or **Debra Brodbeck**,  
ISR Technical Relations Director, at [brodbeck@uci.edu](mailto:brodbeck@uci.edu), +1 (949) 824-2260.

## FOCUS ON FACULTY

### Meet Thomas Alspaugh, Requirements Guru

Thomas Alspaugh  
(<http://www.isr.uci.edu/~alspaugh>) is an Assistant Professor of Information and



Computer Science at UC Irvine. Prior to receiving his Ph.D. and joining ICS, he worked as a software developer and manager at a number of private companies, including IBM and Data General. At Data

General he originated and led a project that rationalized and made dependable the configuration, test, build, and release management of their Unix software products. For another company, whose business focus was not software, Thomas brought sensible requirements and development practices to then-successful products, previously hobbled by a series of chaotic support and embedded software projects.

Thomas' research interests center around software development as a real world activity, particularly the effective use of non-code representations of software (e.g., requirements and specifications) to produce better software sooner and more efficiently. He believes that ongoing industry software development projects are the best source of research problems and data, and that increased software quality and development efficiency should be the goal of all software engineering research. His most recent research is on the use of scenarios for specifying software. Thomas is the author of the current definition of the "scenario management problem," provided in his RE '99 paper. This seminal research spawned a new research stream within the Requirements Engineering community.

As a member of the Naval Research Laboratory's Software Cost Reduction project (also known as the A-7 project), Thomas coauthored the groundbreaking A-7 requirements document. That document provided a requirements model that both stakeholders (e.g., users, financial managers, marketers, etc.) and developers understand and find useful. Hence, both groups are motivated to keep the document accurate throughout the product's lifetime. The A-7 model has been

applied in a sequence of aircraft and other high assurance development projects, and continues to influence requirements engineering research and practice.

Thomas has been the recipient of several international invitations recently. In March, he was the invited speaker at University College London's Department of Computer Science, speaking on "Validating an Integrated Scenario Strategy." He has also been invited to serve on the Program Committee for the International Workshop on Requirements Engineering: Foundation for Software Quality (REFSQ '03), which will be held jointly with the Conference on Advanced Information Systems Engineering (CaiSE '03) in Austria this June.

Thomas Alspaugh joined ISR in September 2002. He can be reached at [alspaugh@ics.uci.edu](mailto:alspaugh@ics.uci.edu), (949) 824-7355.

### ISR Technology ArgoUML Earns Industry Recognition

ISR's ArgoUML technology has been honored as a leading software development tool by an industry panel for *Software Development* magazine. Known to developers as the "Jolts," the annual Product Excellence & Productivity Awards identify and recognize the best offerings in an industry that prizes tools that help make software development faster, easier and more efficient. In the crowded field of design and analysis tools, ArgoUML won a Productivity Award. Only two open source tools made it to the Jolt awards finals and ArgoUML was the only open source winner.

ArgoUML is a UML tool for object-oriented design and analysis. It is unique in that it helps software developers actually learn UML, make better design decisions, keep track of pending decisions, and better visualize design issues. The tool was the brainchild of Jason Robbins, Ph.D. (1999; D. Redmiles, advisor). It emerged from his dissertation to become a popular open source project and a key part of the open source software engineering community at Tigris.org.

This prestigious award demonstrates

#### DID YOU KNOW?

The ISR faculty is renowned for providing one of the top software engineering educations worldwide.



Jason Robbins with "Jolt" award for ArgoUML

ArgoUML's successful transition to widespread use. The tool has been downloaded over 200,000 times by users at thousands of companies, universities, and government agencies around the world. Later this year, it will be bundled in a version of a widely used software engineering textbook: *Object-Oriented and Classical Software Engineering*, 6th ed. by Stephen R. Schach. The adoption of ArgoUML is yet another example of ISR's technology transfer expertise. (Read about other ISR tech transfers in articles on pages 1, 2, and 5.)

After graduation, Jason joined CollabNet as its tenth employee and Chief Architect of the SourceCast collaborative development environment. SourceCast securely hosts strategic development projects for companies including HP, Sun, Motorola, and Sybase. Jason has returned to UCI as a lecturer in the School of Information and Computer Science, rubbing elbows with colleagues at ISR.

For more information, visit:

<http://www.isr.uci.edu/~jrobbins>

<http://Tigris.org>

Jason Robbins can be reached at (949) 824-6534, [jrobbins@ics.uci.edu](mailto:jrobbins@ics.uci.edu).

## FOCUS ON SPONSORS

### International Benefits Accrue from ISR Internship at NASA/Ames

Internships often have mutual benefits that last long beyond the ten weeks or so that an ISR graduate student spends working closely with an industry partner. Interns and companies get to know each other well during their time together, frequently resulting in employment, consulting, and/or collaborations after the student's graduation. Increased interactions between ISR faculty and corporate engineers, technical innovations, and two-way knowledge transfers are other lasting internship benefits.

In **Cleidson de Souza's** case, benefits will accrue not only for ISR/UCI and NASA/Ames, where he interned last summer, but will ripple all the way to Brazil for many years to come. Cleidson is on leave from the Department of Informatics at Federal University of Pará (UFPA), Brazil—not as a student, but as a faculty member. He holds both a B.S. and M.S. in Computer Science, and has been teaching computer science courses at UFPA since 1998. Cleidson came to Irvine in 2000, not only to pursue his advanced academic training, but also to benefit from practical experience. Internships were part of his plan—he wanted to study software development in the field, so he can solve problems and improve productivity in Brazilian companies when he returns home. UFPA and the Brazilian government believe in Cleidson's plan. The Brazilian Research agency CAPES will support him for four years as he pursues his Ph.D. at UCI with advisor **David Redmiles**, after which he'll return to UFPA.

How did Cleidson end up at UCI? And happen to choose NASA/Ames for his first foray into industry? Feedback from a 1999 conference submission pointed to David Redmiles' research, which led Cleidson to looking into UCI's Information and Computer Science program. When he discovered ISR/UCI was renowned for its strengths in computer supported cooperative work (CSCW) and software engineering, the deal was cinched. And why, given multiple internship offers, did Cleidson decide to go to NASA/Ames last summer? NASA's reputation, their application realm ("top notch personnel working on unique space exploration projects"), and the opportunity to study software developers in practice were the perfect fit with Cleidson's personal and research objectives.

In his ten weeks at the NASA/Ames Research Center and the Research Institute for Advanced Computer Science (RIACS), as part of their Summer Student Research Program (SSRP), Cleidson got his wish: he worked with 31 collocated software engineers who design, test, document and maintain different tools that support air traffic controllers. Under the on-site guidance of **John Penix** and **Maarten Sierhuis**, Cleidson was able to make first-hand observations of the formal and informal approaches used by the software engineering group in the management of their software development processes. Research findings from this internship experience will help Cleidson identify where current technologies and practices used in software development succeed and fail, and suggest solutions to the latter problems.

Although returning to NASA/Ames this coming summer was an attractive option, Cleidson has accepted an internship with IBM Watson Research Center in Cambridge (Massachusetts), where he will continue his studies of software engineers in practice—adding more experience that will benefit Brazilian companies in future. And not to worry about NASA/Ames—they will have two new ISR student interns this summer, **Steve Abrams** and **Keri Carpenter** (Gloria Mark, advisor). See *Student Newsbriefs*, page 6.

Cleidson de Souza can be reached at [cdesouza@ics.uci.edu](mailto:cdesouza@ics.uci.edu).

For help in arranging for an ISR intern, please contact Susan J. Knight at [sknight@uci.edu](mailto:sknight@uci.edu), (949) 824-5927.



Susan J. Knight

### Become Part of the ISR Family

Rubbing elbows with ISR faculty, staff and students gives you a valuable window into the technology landscape of the future. But a relationship with ISR can be much more: Think of us an extension of your company—a think tank, an R&D department, a research library, a consulting firm, a training department, and an employment agency, all rolled into one. More importantly, when you sponsor ISR you become part of a friendly group of folks who speak the same language and are eager to work with you to solve your current technical problems in the most cost-effective way possible.

Be part of the ISR Family—a Friend, Affiliate, or Partner.

For more information, visit our Web site: <http://www.isr.uci.edu/sponsorship.html> or contact:

**Dr. Susan J. Knight**  
[sknight@uci.edu](mailto:sknight@uci.edu)  
(949) 824-5927

#### DID YOU KNOW?

ISR has long been known for its worldwide leadership in interactive and collaborative technology (ICT), the human side of computing.



David Redmiles and Cleidson de Souza

## FOCUS ON SPONSORS

### Collaborations between The Aerospace Corporation and ISR Bear Fruit

For the past year, The Aerospace Corporation and ISR have been revitalizing a long-term relationship. Ties between our organizations go back over 10 years, but this year we've been interacting in new and exciting ways.

Research partnerships and student involvement have been the key goals of our interactions. Our first task was to match interests and projects, and therefore people, across the two organizations—a sometimes challenging task. We met this challenge through preliminary discussions between ISR's Corporate Relations Officer, **Dr. Susan J. Knight**, and **Dr. Rami Razouk**, General Manager, and **Dr. Sergio Alvarado**, Director, Software Architecture/Engineering, key managers within the Aerospace Corporation's Computer Science Division. In these meetings, we identified a critical Aerospace need (software architecture and modeling for space and ground systems) where ISR had significant faculty strengths, technological expertise, and innovative technologies to apply. In addition, we identified several ISR graduate students working on associated projects and eager for industry experience. Two larger meetings were then held, one at The Aerospace Corporation in El Segundo and the other at UCI, in which ISR faculty, ISR students, and Aerospace engineers shared information on their expertise, interests and projects. Following these meetings, Susan and Sergio sought funding mechanisms for a joint project. The culmination of this process was a joint NSF grant proposal with multiple partners, which will provide technologies, solutions, and student interns to meet Aerospace's needs.



Richard Taylor and Rami Razouk

If the joint project is funded, several ISR stu-



John Georgas (second from left) and Richard Taylor (right) at GSAW

dents will act as technical liaisons between the UCI faculty and Aerospace engineers. The Aerospace Corporation will provide internships to these students, who will work side by side with engineers in the development of new software architecture technologies. Aside from the two-way transfer of knowledge they provide, industry internships and fellowships provide unequalled opportunities for students and companies to get to know each other, which often results in full employment or other long-term relationships after graduation.

The revitalization of our relationship led to ISR becoming more involved in Aerospace's annual Ground Systems Architecture Workshop (GSAW). ISR officially became a cooperating organization, along with the likes of the Air Force Space Command, the Jet Propulsion Laboratory, and the Software Engineering Institute.

This year, ISR Ph.D. student **John Georgas** helped organize and co-chair a popular GSAW breakout session on "Architecture-Centric Evolution of Software Intensive Systems," at which he also presented "Recommendations for Architecture-Centric Software Supporting Self-Adaptive Behavior." Georgas later presented "Supporting an Architecture-Based Approach to Systems Modeling" at a full session on the final day. ISR alumnus **Michael Kantor** also participated in GSAW, presenting "Coordination and Monitoring for Ground Control and Distributed Resources" at the breakout session on Distributed Ground Systems. ISR Director, **Richard Taylor**, served as a panelist in the lively, closing discussion "Applying Lessons Learned and Emerging Technologies

to Drive Future Ground System Architectures."

ISR and The Aerospace Corporation have also cooperated in workforce education. Over the course of the past year, three ISR researchers have given technical presentations as part of Aerospace's Technical Forum series. These events were broadcast by videotelecom to remote employee groups on the East Coast; a videotape of the presentation recorded the event for future educational opportunities by both organizations. In addition, The Aerospace Institute, the Corporation's educational arm, will work with ISR to capture educational information from our joint research projects. This information will be disseminated through workforce training programs to both Aerospace employees and federal research center customers. Other educational outcomes of our joint research projects include a new textbook with real-world practical information, and new material for expanded university-based educational curricula.



Lopes

The momentum created by our partnership builds with each new interaction. As a result of one of the Technical Forum presentations this year, new ISR faculty member **Crista Lopes** (introduced in Fall/Winter 2002 *ISR Connector*) has

forged a productive research relationship with **Phillip Schmidt**, a senior Aerospace

## ISR Technical Reports Available Online

ISR is pleased to announce that its technical reports are now available on the ISR Web site. ISR technical reports present information resulting from student and faculty research carried out under the auspices of the Institute. They showcase early results not available in print elsewhere.

ISR technical reports are provided in PDF for easy download and printing.

Recent reports include:

“The Challenges in Preserving Privacy in Awareness Systems”  
**Sameer Patil, Alfred Kobsa**, UCI-ISR-03-3

“Incorporating Off-The-Shelf Components with Event-based Integration”  
**Jie Ren, Richard N. Taylor**, UCI-ISR-03-2

“An Environment for Managing Evolving Product Line Architectures”  
**Akash Garg, Matt Critchlow, Ping Chen, Christopher Van der Westhuizen, André van der Hoek**, UCI-ISR-03-1

“Visualizing Parallel Workspace Activities”  
**Anita Sarma, André van der Hoek**, UCI-ISR-02-8

“An Approach for Tracing and Understanding Asynchronous Systems”  
**Scott Hendrickson, Eric Dashofy, Adrita Bhor, Richard N. Taylor, Santiago Li, Nghi Nguyen**, UCI-ISR-02-7

“Decentralized Software Architecture”  
**Rohit Khare**, UCI-ISR-02-6

“Aspect-Oriented Programming: An Historical Perspective (What’s in a Name?)”  
**Cristina Videira Lopes**, UCI-ISR-02-5

“Studies of Automated Collection of Email Records”  
**Danyel Fisher, Paul Moody**, UCI-ISR-02-4

All ISR technical reports are available at:

<http://www.isr.uci.edu/tech-reports.html>

For more information, contact:

**Debra A. Brodbeck**  
Technical Relations Director  
brodbeck@uci.edu, (949) 824-2260

engineer. Lopes and Schmidt are working together to develop a powerful diagnostic tool based on Aspect Oriented Programming. This tool takes architectural artifacts (mainly in UML) from several different contractors and checks how solid those architectures are with respect to several factors. It does so by allowing the diagnostics engineer to define ‘aspectual queries.’ Specifically, it mines the XML representations of the UML diagrams looking for systemic cross-cutting properties. Using this tool, they have found a variety of interesting

data related to how people really (mis)use UML. Schmidt and Lopes will talk about their collaborative research at the ISR Research Forum in June. (*For information on the upcoming Research Forum, see Events Schedule page 7, story page 8.*)

To explore collaborative opportunities, please contact Susan J. Knight at [sknight@uci.edu](mailto:sknight@uci.edu), (949) 824-5927 or Debra A. Brodbeck at [brodbeck@uci.edu](mailto:brodbeck@uci.edu), (949) 824-2260.

## ISR STUDENT NEWS BRIEFS

**Steve Abrams** and **Keri Carpenter** (G.

Mark, advisor) have both received internships at NASA Ames Research Center this summer. Steve will be working with David Bell analyzing documentation and models produced in collaborative Space Mission Design at JPL. Keri will be working with Jay Trimble



Abrams

of the Mars Exploration Rovers Project and working on HCI/CSCW aspects of the MERBoard information portal.

**Marlon Vieira** (D. Richardson, advisor) will receive his Ph.D. in spring 2003. His dissertation is titled “A Compositional Approach for Analyzing Dependence in Component-Based Systems.” Marlon has accepted a position at Siemens Corporate Research in New Jersey as a Member of the Technical Staff. He begins in May. We congratulate Marlon on his achievements!

**Emily Oh Navarro** (A. van der Hoek, advisor), **Eric Dashofy** (R. Taylor, advisor), and **John Georgas** (R. Taylor, advisor) all received GAANN (Graduate Assistance in Areas of National Need) fellowships this year. This program awards fellowships to exceptional graduate students who pursue the highest degree available in fields of national need, in this case, computer and information science.

**Dawit Yimam Seid** and Alfred Kobsa (advisor) published a paper titled “Expert Finding Systems for Organizations: Problem and Domain Analysis and the DEMOIR Approach” in M. Ackerman, V. Pipek and V. Wulf, eds.: *Beyond Knowledge Management: Sharing Expertise*. Cambridge, MA: MIT Press. 2003.

## ISR STUDENT NEWSBRIEFS

**Rohit Khare** (R. Taylor, advisor), who took a detour with his dissertation research to found the technology company KnowNow, has been in the news recently. In addition to being featured on India Post TV, Rohit's company was given top honors in the InfoWorld



Khare

Technology of the Year awards (<http://infoworld.com>). KnowNow's LiveData Platform™ software was honored among the 10 most important enterprise computing technologies of the past year <http://knownow.com/news/20030320.html>.

**Ping Chen** (A. van der Hoek, advisor) was recognized as the December 2002 "Researcher of the Month" by the UCI Undergraduate Research Opportunities Program (UROP), and was chosen with four UROP



Chen

finalists to represent UCI at the May 16th University of Washington Sixth Annual Undergraduate Research Symposium. Ping's passion for research, which he has been conducting on the evolution of software architectures, was noted. Ping will graduate from UCI's School of Information and Computer Science in June 2003 and pursue his Ph.D. within ISR/UCI this Fall.

**For more information** on students: <http://www.isr.uci.edu/people.html>

## WANT TO GET INVOLVED?

Sponsoring ISR has many benefits. It enables your company to form closer ties with our faculty and students, puts you on the fast track to our leading edge research, and gives you first crack at our experimental software tools. Choose from five levels of sponsorship:

Support Level	Annual Contribution	Contribution goes to:
Friend	\$10,000	ISR's general research fund.
Affiliate—Research	\$30,000	A designated ISR research area.
Affiliate—Visiting	\$40,000	Host Faculty's research area.
Affiliate—Grad Student	\$60,000	Graduate Student fellowship.
Partner	\$100,000 or more	Large-scale research project.

For more information about ISR Sponsorship, please contact:

**Dr. Susan J. Knight**  
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## ISR EVENTS SCHEDULE

*Mark your calendars now!*

**Thursday, May 8, 2003**  
**Colloquium: Marc Smith**

IBM Research  
"Data Mining Social Cyberspaces: Tools for Enhancing Online Communities"  
3:30-5:00 p.m.  
432/438 Computer Science Building



Kemmerer

**Friday, June 6, 2003**

**Distinguished Speaker: Richard Kemmerer**

Dept. of Computer Science, University of California, Santa Barbara  
"Designing a Web of Highly-Configurable Intrusion Detection Sensors"  
2:00-3:30 p.m.  
UCI Student Center, Monarch Bay A

**Tuesday, June 17, 2003**  
**2003 ISR Research Forum**  
**Keynote speaker:**

**Dr. Alfred Z. Spector**, Vice President of Services & Software, IBM Research Division  
1:30-8:00 p.m.  
McDonnell Douglas Auditorium,  
Reception with posters and demos at UCI University Club (UClub)  
Details and full schedule at <http://www.isr.uci.edu/events/Research-Forum-2003/>

*For more information, see story, page 8.*

**August 2003 (tentative)**

**Distinguished Speaker: Mary Jean Harrold**  
College of Computing, Georgia Institute of Technology  
"Testing and Analysis of Next Generation Software"  
Rescheduled from February 2002. Location TBA

*The full 2003-04 Distinguished Speaker series will be announced this summer.*

For more information: <http://www.isr.uci.edu/events.html>

## Alfred Spector, IBM Research, Keynotes 2003 ISR Research Forum: *Where Research Meets the Real World*

This year's ISR Research Forum continues last year's successful confluence of technical, management, and academic participation, with a major goal of facilitating collaborative industry-academia interactions for research and technology transition. Again this year, we will showcase ISR research of strategic import to industry, including current collaborative projects with industry partners. In addition to marking the path of future technical and strategic directions, the Forum will encourage exchange of ideas, needs, and experiences between academia and industry. The themes for the Forum this year are:

- Decentralized applications
- Software design and architecture
- Interactive and collaborative technologies
- Requirements engineering

The conference will be held in the McDonnell Douglas Auditorium on the UCI campus on Tuesday, June 17, 2003. Immediately following the conference, the highly popular reception will follow at the University Club (UClub). At the reception, there will be plenty of time to make the rounds of the many manned posters and demonstrations; interact with students, faculty and industry participants; and ask the speakers follow-up questions.

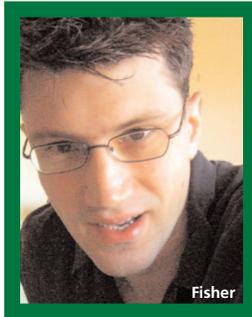
The highlight of the 2003 ISR Research Forum will be **Dr. Alfred Z. Spector's** Keynote presentation, entitled, "On Demand Systems." The talk will discuss the benefits and challenges of managing and automating multi-tasking. Dr. Spector has a wealth of experience in both academia and industry, and has worked with government agencies such as NSF. Though he describes himself as technical, Dr. Spector has worked for a number of years at IBM in senior management roles, including Senior Technical Strategist



Spector

Currently, he is Vice President of Services and Software at IBM's T.J. Watson Research Center in New York.

This year's Forum panel addresses the controversial subject, "Web Services vs. Distributed Objects: Architectures for Decentralized Applications." Now-standard technologies for assembling component software like CORBA have proven quite effective "inside the enterprise," but what will it take to enable the connections across organizational boundaries that will enable the "real-time enterprise"? Web Services, on the other hand, are hailed as the latest silver bullet for integration, yet so far have been limited to RPC-style applications, prompting some to dismiss it as no better than "CORBA with [XML] angle brackets." Rohit Khare (R. Taylor, advisor), who has examined decentralized software architecture in depth (*see his tech report UCI-ISR-02-5, page 5*), will moderate the panel of industry and academic pundits.

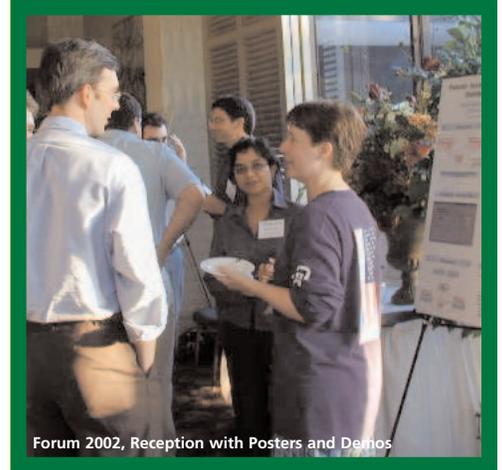


Fisher

and General Manager of Marketing and Strategy. In addition, he was founder and CEO of Transarc Corporation, a pioneer in distributed transaction processing and wide area file systems.

- "Toward Naturalistic Programming Systems" Prof. Cristina Videira Lopes, UC Irvine/ISR
- "Aspect Oriented Modeling" Phil Schmidt, The Aerospace Corp.
- "Scenarios for Software Specification" Prof. Thomas Alspaugh, UC Irvine/ISR
- "Activating the Social Workscape" Danyel Fisher, UC Irvine/ISR

If last year's Forum is a reasonable measure, the poster and demo session following the conference presentations will be a big hit with attendees—and not only because of the great food and drink provided. The posters and demos will cover a wide variety of sub-



Forum 2002, Reception with Posters and Demos

jects, adding to the breadth of the overall Forum research exposition, and will include most ISR students. Some examples:

- Scott Hendrickson (R. Taylor, advisor): "Message Trace Analysis Tool"
- Victor Gonzalez (G. Mark, advisor): "Market Penetration of Visual Interfaces: An Analysis of Impediments"
- Sameer Patil (A. Kobsa, advisor): "Privacy about Awareness Mechanisms in Distributed Software Development"

Watch the Forum Web site for more information.

<http://www.isr.uci.edu/events/Research-Forum-2003/>

**Space is limited!** Register early by completing the online registration form.

# ISR

To receive the *ISR Connector*, send an email request to: [isr@uci.edu](mailto:isr@uci.edu)

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