COMPUTER SCIENCE

Thursdays at 12:00 noon
Salazar 2016

COLLOQUIUM

SEP 04	Peter Thompson, Sonoma State University Alumnus **EXPLORING WEB SERVICES AND SERVICE-ORIENTED ARCHITECTURE** What are Web Services and Service-Oriented Architecture? What are they good for? How do they work? I'll walk through some scenarios and dig into some of the code that enables platform-agnostic interactions. Along the way, I'll show how being familiar with procedural, declarative, and object-oriented, pattern-based programming in a distributed computing environment can help demystify this complex and important topic. I am by no means an expert on this. This talk is as much about how I am approaching the problem of needing to stay current with industry standards as it is about the technology itself. I'll share a list of tools and learning resources I have encountered so far.
SEP 11	Bill Kendrick, Open Source Developer, Davis **TUX PAINT - HOW I MADE MILLIONS OF KIDS HAPPY IN MY SPARE TIME** Epiphanies, frustrations, l10n, cross-platform considerations, web scripting, automation, project management, and other things you need to worry about to create a popular and award-winning replacement for crayons. **Pizza after talk**
SEP 18	Markus Jakobsson, Xerox PARC **LOVE AND AUTHENTICATION - ADDRESSING THE PROBLEM OF PASSWORD RESET** One of the most commonly neglected security vulnerabilities associated with typical online service providers lies in the password reset process. By being based on a small number of questions whose answers often can be derived using data-mining techniques, or even guessed, many sites are open to attack. To exacerbate the problem, many sites pose the very same questions to users wishing to reset their forgotten passwords, creating a common "meta password" between sites: the password reset questions. At the same time, as the number of accounts per user increases, so does the risk for the user to forget her password. Unfortunately, the cost of a customer-service mediated password reset---currently averaging $22 is far beyond possible for most service providers. In this talk, an alternative technique will be presented. It is fast and efficient, compatible with input-constrained devices (such as handhelds), and has low error rates.
SEP 25	Bruce Lindsay, IBM Almaden **RDBMS: FROM FANTASY TO INFRASTRUCTURE - A JOURNEY OF INNOVATION** Dr. Bruce Lindsay, an IBM Fellow at the IBM Almaden Research Center, will review the exciting series of innovations that led to the acceptance and deployment of Relational Database Management Systems. From Dr. Ted Codd's seminal papers, through the development of new transaction management technologies and query processing strategies, Dr. Lindsay will describe the technical innovations that were key to the adoption of RDBMS technology in business critical applications.
OCT 2	Tom Barclay, Microsoft Research, San Francisco **MICROSOFT TERRASERVER: A LOOK BACK AT A 10-YEAR SCALABILITY RESEARCH PROJECT THAT WON'T DIE** An enormous challenge in industrial research is getting research ideas and prototypes into products. Microsoft TerraServer is an industrial research project whose primary focus was to improve the chances of such transfers. In the mid 1990s, Microsoft was rewriting SQL Server from the ground-up to compete with Oracle, Db2, and others in the DBMS marketplace. A key requirement was scalability. The SQL team commissioned Jim Gray's research group to build a real world Internet application that would test the SQL system's ability to scale a single database server to terabytes and demonstrate scalability to end users and potential customers on the Internet for a period of 18 months. This past June, TerraServer logged its tenth year on the Internet and remains popular in the face of competition with Google Maps, Google Earth, Virtual Earth, Yahoo Maps, Globe Explorer, and others. This talk will review both the organizational and technical characteristics and accomplishments of the project and how TerraServer led the way to systems like Google Earth (Keyhole), Virtual Earth, and others.
OCT 9	Julia Grace, IBM Almaden **SOCIAL WEB: HOW SOCIAL AND COLLABORATIVE COMPUTING IS CHANGING THE ENTERPRISE** As globally distributed teams become more of the norm, new, innovative tools are needed to encourage collaboration and promote team coherence and communication. In this talk I will discuss several of the Web2.0 applications that we use at IBM to promote and foster business relationships and increase productivity.
OCT 16	Andru Luvisi, Sonoma State University **TIPS FROM A LAZY DSL DESIGNER**

	This talk will discuss various approaches to implementing Domain Specific Languages (DSLs), with an emphasis on ease of implementation. Some language specific techniques will be discussed, along with some more general approaches that can be applied in many programming languages. A couple of DSLs used within SSU/IT may be described if time permits.
OCT 23	Vicki Shreiner (SGI) & David Shreiner (ARM), Mountain View **IS THAT A GPU IN YOUR POCKET, OR ARE YOU JUST HAPPY TO SEE ME? -- MOBILE GRAPHICS REACHES MATURITY** Mobile graphics -- those you find in cell phones and GPS units -- have recently matured to a point where most of the features you find in desktop GPUs are available in small, battery powered devices. This talk will discuss the development environments available, capabilities and limitations, and include a brief introduction to OpenGL ES. A demonstration of one of the leading mobile GPUs will accompany the talk.
OCT 30	Wendy Bartlett, Hewlett-Packard, Cupertino **LIFE ON THE FAULT-TOLERANT FRONTIER** In 1976, Tandem Computers shipped its first commercial, single-fault-tolerant server. Today, HP is shipping its successors, Non-Stop servers. In this talk Wendy Bartlett, one of the early developers, will give her first-hand view of how the system has evolved over the last 30 years. She will also share her insights on how the company evolved from a start-up through rapid growth, an acquisition, and a merger.
NOV 6	Jason Shankel, Maxis, Walnut Creek **SIMULATING PLANETARY ENVIRONMENTS** This talk will describe some of the techniques used to simulate realistic dynamic planetary environments for computer games, including geology, water flow, weather, and life. **Pizza after talk**
NOV 13	Jim Horning, Sparta, Sunnyvale **THE CASE FOR INFRASTRUCTURE MAINTENANCE** Civilization and infrastructure are intimately intertwined. Rising civilizations build and benefit from their infrastructures in a "virtuous cycle. As civilizations decline, their infrastructures decay. Dependence on critical infrastructures is increasing worldwide. This is true not only of information systems and network services, but also of energy, water, sanitation, transportation, and others that we rely on for our livelihood and well-being. These critical infrastructures are becoming more interrelated, and more heavily dependent on information technology. People demand ever more and better services, but understand ever less about what it takes to provide those services. Engineers know that physical infrastructures decay without regular maintenance, and prepare for aging (e.g., corrosion and erosion) that requires inspections and repairs. Proper maintenance is generally the cheapest form of insurance against failures. However, it has a definite present cost that must be balanced against the unknown future cost of possible failures. Although computer software does not rust, it is subject to incompatibilities and failures caused by evolving requirements, changing environments, changes in underlying hardware and software, changing user practices, and malicious exploitation of discovered vulnerabilities. Therefore, it requires maintenance. Yet the costs of maintenance are often ignored in the planning, design, construction, and operation of critical systems. Incremental upgrades to software are error-prone. Software engineers receive little training in preparing for software aging, in supporting legacy software, or in knowing when and how to terminate decrepit legacy systems.
NOV 20	Chris Ramstad, Joe Miguel, Stephen West, Cyanoptic, Petaluma **USING PYTHON IN EMBEDDED APPLICATIONS** Python is a high level dynamic programming language with a large selection of built-in and third party libraries. It has become a mature and well tested language over the last 17 years. Traditionally, Python has not been considered as a primary tool for implementing core functionalities on embedded products. It is often either not considered because it is a 'scripting language' or rejected due to concern about poor performance. However, given the ever growing complexity of software requirements, pressure to shorten time to market, and the continual drop of cost in computing power, leveraging Python makes more sense. Python can now be considered as a viable alternative to C/C++/Java in many high performance embedded applications.
NOV 27	**Thanksgiving (No Colloquium)**
DEC 04	Student Research Reports **COMPUTER SCIENCE MAJORS PRESENT THEIR WORK** **Pizza after presentations**
DEC 11	End of Semester Celebration **SHORT PRESENTATIONS OF RESEARCH CARRIED OUT BY SONOMA STATE COMPUTER SCIENCE STUDENTS** **AND AWARDS PRESENTED TO SONOMA STATE COMPUTER SCIENCE MAJORS** **Pizza after celebration**