THIRTIETH SERIES **SPRING 2009**

COMPUTER SCIENCE COLLOQUIUM

Thursdays at 12:00 noon
Salazar 2016

FEB 5	Tuoshi Lu, Yahoo!, Sunnyvale LARGE SCALE WEB SEARCH ENGINE DESIGN BASICS AND CHALLENGES Search engine technologies have been around for a long time. It's not too hard to build an engine for an enterprise. Databases can also function as search engines. However, to build a search engine at web scale that can support millions of users and search through billions of web pages with sub-second performance is a huge challenge. This challenge is compounded by an open Internet with unstructured information and a very diversified user community. This talk examines the technologies behind modern search engines and the issues search engine designers face.
FEB.12	Helen Pai, Douglas Felder, Ernesto Frutos, F2ware, San Jose F2ID SOLUTION, PEACE OF MIND FOR WEB ACCESS The explosive growth of the Internet and World Wide Web have made the browser the default access tool of choice for enterprise, financial and banking applications. Cyber criminals intent on stealing your identity continue to devise attacks, such as phishing, man-in-the-middle, and pharming to defeat user ID and password security measures. F2ware has developed a unique technology to greatly increase the security of browser-based enterprise access in the area of user authentication. This technology is low cost, easy to implement with no software downloads or tokens required. F2ware will introduce their F2ID system for B2C and B2B markets the first quarter of 2009.
FEB.19	Mary Baker, Hewlett-Packard, Palo Alto STORING STUFF FOREVER Many enterprises, organizations and individuals find themselves needing to preserve large volumes of quickly accessible digital content indefinitely into the future. The costs of doing so are often prohibitive, and even when money isn't a problem, lots of traditional storage systems and processes aren't designed with good ideas about how to safeguard these digital assets over long time periods. We examine threats to long-lived data from an end-to-end perspective, taking into account not just hardware and software faults but also faults due to people and organizations. We present a simple model of long-term storage failures that helps us reason about various strategies for addressing some of these threats. Using this model we are building tools that exploit the most important strategies for increasing the reliability of long-term storage: detecting latent faults quickly, automating fault repair to make it cheaper and faster, and increasing the independence of data replicas.
FEB.26	Paul Vixie, Internet Systems Consortium, Redwood City DNS SUMMER OF FEAR 2008: HOW I LEARNED TO STOP WORRYING AND LOVE 16 BIT NONCES In February 2008 I got a phone call from a guy who said he'd found a way to insert any data he wanted anywhere in the DNS. I spent the next six months trying to coordinate a global patch event. Now this fantastic story of heroism and buffoonery can finally be told.
MAR.05	Greg Scull, FCMAT/California School Information Services, Sacramento IMPLEMENTING ENTERPRISE APPLICATION ARCHITECTURE DESIGN PATTERNS: A REAL WORLD EXAMPLE This talk is a review of some of the core concepts behind a few frequently used enterprise design patterns.The concepts are Inversion of Control, Dependency Injection, the Factory Pattern, the Data Access Pattern, and Transfer Objects. The purpose of the talk is to examine real world examples of how and why these patterns are important in enterprise application architecture.
MAR 12	Ytha Y. Yu, California State University East Bay, Hayward RUBY - AN INTRODUCTION Ruby is an interpreted object oriented programming language that has become popular recently. The Ruby on Rails framework is designed for fast and easy development of websites. This talk is a quick tour of some of the features of this language.

MAR 19	Oscar Ibarra, University of California, Santa Barbara COMPUTING WITH CELLS: MEMBRANE SYSTEMS Membrane computing is a part of the general research effort of describing and investigating computing models, ideas, architectures, and paradigms from the processes taking place in nature. It is a recent branch of molecular computing that aims to develop models and paradigms that are motivated by cell biology. Membrane computing models have great potential for implementing massively concurrent systems in an efficient way that would allow us to solve currently intractable problems once future biotechnology gives way to a practical bio-realization. This talk is a brief overview of the area and a report on recent results that answer some interesting and fundamental open questions in this new field.
MAR.26	David Pease, IBM Almaden Research Center, San Jose STORAGE CLASS MEMORY TECHNOLOGY AND USE The dream of replacing the disk drive, with solid-state, nonvolatile random access memory is finally becoming a reality. There are several technologies under active research and development, such as advanced forms of FLASH, Phase Change Memory, Magnetic RAM and others. They are collectively called Storage Class Memory (SCM). The advent of this technology will likely have a significant impact on the design of both future storage and memory systems. The first part of this talk will give an overview of the SCM device technologies being developed and how they will impact the design of storage controllers and storage systems. The device overview will emphasize technology paths to very high bit densities, which will enable low cost storage devices, ultimately becoming cost competitive with enterprise disks. In addition, SCM is fast enough to be used as (non-volatile) main memory, complementing DRAM.Eventually, the availability of such storage will both enable and demand profound changes in file system architecture and implementation. This talk also explores some ways in which file systems could adapt to this new storage environment.
APR 02	Thomas Poff, Micromat, Santa Rosa DIAGNOSTIC TOOLS, CASE TOOLS, MODERN APPS Micromat is an Objective-C shop. C++ is not allowed. We write diagnostics tools. This may sound mundane. However, there are always bright spots, largely because we have to do a little of everything. We often use Quartz Composer now, which allows you to link a visual representation of OpenGL+other Apple UI/audio abstractions easy to code. You can think of it as a CASE tool. It is being quietly integrated into the finder and modern apps. Pizza after talk
APR 09	Bill Blunden, San Francisco State University, San Francisco ROOTKITS With the emergence of the online economy, rootkit technology has taken center stage in the ongoing battle between White Hats and Black Hats. Adopting an approach that favors full disclosure, the speaker will guide the audience through the murky back alleys of the Internet, shedding light on material that has traditionally been poorly documented, partially documented, or intentionally undocumented. He will also examine the role that rootkits play on the "grand chessboard" and briefly comment on analogies in the political arena.
APR 16	SPRING RECESS (No Colloquium)
APR 23	Pam Samuelson, University of California, Berkeley IS SOFTWARE STILL PATENTABLE? SHOULD IT BE? The Supreme Court issued several rulings in the 1970s and 1980s that cast doubt on whether computer programs or at least certain kinds of innovations embodied in programs (e.g., algorithms) were patentable subject matter. The Court of Appeals for the Federal Circuit, which hears appeals in all patent cases, has never found those decisions persuasive and has taken a much broader view of patent subject matter - at least until the Supreme Court started giving indications that it was interested in reviewing patent subject matter cases, including ones involving software innovations. Responding to this clear signal, the Federal Circuit has begun issuing some rulings narrowing patent subject matter. *In re Bilski*, which involved a claim for a patent on a method of hedging the risk of volatility in the market for energy commodities depending on vagaries of the weather, recently held that method unpatentable and announced a test for patent subject matter that some believe will render many software innovations unpatentable. This talk will suggest that the Federal Circuit is likely to continue to hold software innovations to be patent subject matter, but that the Supreme Court may still wish to revisit this question, as the Federal Circuit's approach is too formalist and unpersuasive.
APR 30	Jason Shankel, Maxis Software, Emeryville UNDERSTANDING ROTATION Geometric rotation is a cornerstone of physics, animation, and graphics programming. This talk examines how rotation operations are represented and utilized in 3D applications. Pizza after talk
MAY 07	STUDENT PRESENTATIONS SHORT PRESENTATIONS OF RESEARCH CARRIED OUT BY SONOMA STATE COMPUTER SCIENCE STUDENTS Pizza after talks
MAY14	END OF SEMESTER CELEBRATION AWARDS PRESENTED TO SONOMA STATE COMPUTER SCIENCE MAJORS Pizza after ceremony

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Parking is usually available in Lots “E” and “F” and costs $2.50.

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