COMPUTER SCIENCE COLLOQUIUM

THURSDAYS   12:00 NOON   SALAZAR 2016

JAN.31	Jason Shankel, Stupid Fun Club **INTERACTIVE ENTERTAINING AND SOCIAL RESPONSIBILITY** From video games to the Internet to mobile devices, the entertainment aspect of modern technology has become a very powerful force in society. And with great power, so the saying goes, comes great responsibility. This talk will address issues of social responsibility in electronic entertainment.
FEB.07	Eva Galperin, Electronic Frontier Foundation **ALL YOUR BYTES ARE BELONG TO US: THE CHANGING FACE OF INTERNET SURVEILLANCE IN SYRIA** Over the course of the Syrian uprising, the Assad regime has used a variety of strategies to spy on activists, dissidents, and members of the opposition in Syria. This talk will trace the evolution of Syrian surveillance from Deep Packet Inspection using US made Blue Coat devices to campaigns of phishing and covertly installed malware, describe the current state of Internet surveillance in Syria, and speculate about possible future developments.
FEB.14	David Greenspan, Meteor **THE NEXT SOFTWARE GENERATION** We are on the verge of a new explosion of software. We have all the technology we need to make software fast, reliable, beautiful, and exquisitely suited to the task at hand, yet every day we use clunky and idiosyncratic interfaces that were developed at great expense. This is an unstable state of affairs maintained by cultural, economic, and institutional forces. I explain three big realizations happening in the software ecosystem that will change everything, one that is already well underway and two that are coming. First, software is best produced with a small creative team of engineers rather than a large, traditionally managed hierarchy, though this is only possible with careful attention to process. Second, the much-lamented gap between academia and practice in programming languages, databases, and other building-block technologies is not so mysterious but exists for mundane reasons; "better" technologies can win the popularity contest and spread far and wide, but it requires specific effort, resources, and an understanding of why programmers choose the tools they do. Third, it is now so cheap to develop and distribute software (and even hardware) that economic forces will reshape software companies and careers. These shifts will empower and incentivize individual developers to make the software they want to see in the world.
FEB.21	**PIZZA AFTER TALK IN DARWIN 28** Benjamin Morrison, mFoundry **WHAT COLLEGE FORGOT: JOB HUNTING FOR C.S. STUDENTS** You've graduated, now what do you do? Graduating with your degree is just the first step on the road to the working world. Luckily this talk will provide you with knowledge and tools on how to look for a job and what to expect from an interview. I'll share my experiences being an interviewee and what I look for when I'm interviewing potential candidates. The goal will not be to tell you how to dazzle and wow potential employers but how to prepare yourself and allow the skills and knowledge you have do the dazzling for you.
FEB.28	Joel Coburn, Google **PROVIDING FAST AND SAFE ACCESS TO NEXT-GENERATION, NON-VOLATILE MEMORIES** Emerging non-volatile memory technologies such as phase change memory, spin-torque transfer memory, and the memristor, will provide many orders of magnitude decrease in latency compared to disk and flash memory, dramatic increases in bandwidth, and a byte-addressable interface similar to DRAM. These new memories offer the possibility of enormous performance gains, but fully realizing them will require us to rid software of disk-centric optimizations, design decisions, and architectures that limit performance and ignore bottlenecks that the poor performance of disks have hidden in the past. The algorithms and architectures that storage and database systems use to enforce strong consistency guarantees are especially important to system performance, and current solutions are deeply tied to conventional disk technology. This work addresses the problem of providing transactional support for fast, non-volatile memories that can make programming easy and exploit the raw performance of these new technologies. First, we present a prototype PCIe-based storage array that targets fast, non-volatile memories and provides hardware support for multi-part atomic write operations. Unlike previous approaches for flash-based SSDs, our atomic write support makes logging scalable and transparent to the user, providing a strong foundation for implementing full transactions. Using multi-part atomic writes we show how existing transactions mechanisms such as ARIES can be redesigned to make optimal use of these memories. Second, we consider how to provide safety for storage that is directly accessible via the processor's memory bus. We present NV-heaps, a persistent object store which provides a familiar programming interface and protects against application and system failures by avoiding familiar programmer errors as well as new errors that only arise with persistent objects.
MAR.07	Hilarie Orman, Purplestreak **TOWARDS A SEMANTICS OF PHISH** Phishing constitutes more than half of all reported security incidents on the Internet. The attacks cause users to erroneously trust websites and enter sensitive data because the email notifications and the website look familiar. Our hypothesis is that familiarity can be defined formally using history data from the user's computer, and effective presentation of the data can help users distinguish phishing messages from trustworthy messages.
MAR.14	Merith Weisman & Lomesh Shah **I HAVE AN IDEA TO START THE PERFECT BUSINESS** Google, Facebook, Instagram, Groupon, LinkedIn - the financial successes of most of these companies gets us all inspired to go and start our own company. So what does it really take to take an idea to a profitable business? Let's talk about the process and the not so sexy grunt work that will lie ahead. We will examine the skill sets needed and why the not fun but required Accounting basics course or that really boring Organizational Behavior course will suddenly come in handy. We will examine the role of the team and the often lonely path most entrepreneurs will take in their quest for success.
MAR.21	**Spring Break** – No Lecture
MAR.28	Anne Menendez & Guy Paillet, Cognimem **TO SOLVE THE "MEMORY MISERY" SILICON COGNITIVE MEMORY IS MOVING TOWARD BIOLOGICAL ARCHITECTURE** So far, mainstream computer architecture has been centered around fast processors accessing memory locations at high speed but only one at a time. Multicore processors do somewhat better but bang on the wall of single pipe access and/or task distribution and synchronization. Procedural computing has progressed far, especially thanks to storage and communication innovations. It is spectacular that most of computers today still use sixty-year old paradigms (think ENIAC) with the "fetch/decode/execute model". IBM, which was a partner in developing the ZISC, ancestor of the Cognitive Memory that we are introducing, has recently re-embraced the Cognitive Computing approach. In Cognitive computing the information is stored into each memory node as in procedural computing, but instead of being a "submissive memory" waiting being visited by the processor(s), the Cognitive Memory reacts to a query or stimulus which is disseminated to all memory nodes or neurons in parallel. While certain neurons of the biological systems are hardwired and procedural in nature at birth (such as breath, heartbeat, etc.) the neo-cortex is a very large parallel database which is built during our lifetime and whose neurons react to queries or "auto-queries" (chain reaction of thinking) and indeed external stimuli by the senses.
APR.04	Todd Ziesing, Terrace **UNDERSTANDING THE PROBLEM BEFORE DEVELOPING THE SOFTWARE** A great software release intuitively solves a problem. Your software release will be pedestrian if you aren't able to transform the problem into a simple and efficient user experience. Many engineers focus on learning the syntax and design patterns of the technologies they use to create new software. Programming languages, database designs, interfaces, and security typically consume the average engineer. To be a great engineer you need to move beyond technology syntax. A great engineer spends significant time learning the problem and understanding behaviors of the typical user. Learning the problem and transforming that knowledge into an active, intuitive user experience often requires more time than actually designing and developing the solution. In this talk we plan to present a fast, effective and engaging method to learning the problem, transforming this knowledge into actionable media (e.g. use cases, activity diagrams, site maps, user interface mock ups, etc.) and discuss some of the pitfalls you may encounter along the way. Join us and learn a few very important techniques to gather requirements and transform them into a rich and engaging design.
APR.11	Scott Stanfield, Vertigo **TYPOGRAPHY FOR HACKERS** Most programmers give careful consideration to only one typeface: their monospaced editor font (mine is Monaco). However, the opportunity to affect readability and legibility on a day-to-day basis is more than the designers' burden. If you write code, it should be yours as well. Regrettably, the computerized democratization of typography led to missing-cat posters in Comic Sans, cafe menus in Papyrus and everything else in Times Roman. As computer scientists, you will have the good fortune to work side-by-side with graphic designers throughout your career. Here's a chance to learn a little bit about their craft.
APR.18	John Aycock, University of Calgary, Alberta, Canada **KWYJIBO: FROM PRONOUNCEABLE TO PARODY** This is the story of an algorithm. A former student and I developed this algorithm, Kwyjibo, as a key part of a system to simulate the Internet for a computer security course. Kwyjibo held a secret, however, one that we kept quiet about for two years until other researchers revealed it. Then it was open season: I could finally study how far this algorithm could be pushed for nefarious purposes. But not all applications of Kwyjibo were bad, and an attempt to re-apply the algorithm for education led me serendipitously to parodying Mitt Romney with the help of the computer. Kwyjibo's story touches on computer science education, computer security, ethical issues in research, algorithm engineering, and ultimately art and politics.
APR.25	**PIZZA DURING TALK IN SALAZAR 2016** **STUDENT PRESENTATIONS** / SHORT PRESENTATIONS OF RESEARCH CARRIED OUT BY SONOMA STATE COMPUTER SCIENCE STUDENTS
MAY.02	**PIZZA DURING TALK IN SALAZAR 2016** **END OF SEMESTER CELEBRATION** / AWARDS PRESENTED TO SONOMA STATE COMPUTER SCIENCE MAJORS