

# COMPUTER SCIENCE COLLOQUIUM

Thursdays at 12:00 noon  
Salazar 2016

<b>FEB.17</b>	John Mamer, UCLA Anderson School of Management, Los Angeles, CA <b>Fire Sales and Search</b> We study a model asset sales via search with semi-rational buyers. A seller has a finite (or infinite) number of items to sell; buyers arrive according to a Poisson process. An arriving buyer presents an offer to the seller. Buyers' values for the asset are modeled as independent draws from a probability distribution. The seller must decide whether or not to accept the offer or to reject it and wait for a better one. The seller pays a cost per unit time to continue searching, and has a discount rate. Each potential buyer knows the price of the last sale, and offers the minimum of his reservation value and the price of the last sale. As a result, the seller faces a falling offer distribution, each sales price setting the maximum offer for subsequent sales. Our model has application to distributor/manufacturer negotiations and pricing of technology products.
<b>FEB.24</b>	Sid Paral and Mandel Yu, Verayo, San Jose, CA <b>The *PUF* Makes the Difference</b> Almost daily, we hear about outrageous cases of product counterfeiting; we all experience increased demands for identification of persons and computer data. Traditional concepts of trust, based on scarcity and secrets, are eroded by perfect digital copies, both in software and hardware. Physical Unclonable Functions (PUFs) offer a solution: they reference objects to measurable qualities outside the creator's (or would-be counterfeiters) control, with the help of naturally occurring randomness. In our team, we focus on silicon chips built in a standard manufacturing process, and in particular, on their differential timing performance, rooted in random manufacturing process variations - still within normal circuit specifications. To create reliable and repeatable PUF, the design must emphasize uniqueness while suppressing systematic patterns, digitizing noise, and environmental influences. As a practical example, we will explain the operation of a basic, challengeable, multiplexer-array PUF, explore its response characteristics, choose an operational threshold, and determine its nominal error rates.
<b>MAR.03</b>	Dario Zea, MarketLive, Petaluma, CA <b>Hosting and Managed Services for eCommerce</b> Successful ecommerce sites require a reliable and robust infrastructure that scales horizontally as user demand increases. This infrastructure needs to be able to recover quickly from downtime potentially caused by multiple sources such as the main application engine, resource utilization across environments or even external denial of service attacks. For this talk we will go over what it takes to manage networks and systems for high availability, tools used to oversee performance and capacity, and technologies used to deploy a production environment.
<b>MAR.10</b>	EJ Jung, Computer Science, University of San Francisco, San Francisco, CA <b>Non-invasive Malicious JavaScript Detection</b> Malicious JavaScript detection is challenging in several ways. First, it is usually invisible to users, so it cannot be avoided by users' vigilance. Second, it is often heavily obfuscated to bypass signature-based detection mechanisms and term-based classifiers such as the Bayesian classifier often used for spam detection. We have combined a web crawler for targeted collection of malicious JavaScript, a de-obfuscator that derives URLs from malicious JavaScript, and multiple classifiers for a comprehensive detection framework. Among tested, Support-Vector Machine showed the best performance. Given our test set from well-known malicious JavaScript repositories and high-traffic websites, our framework detects around 90% of malicious JavaScript and 99.9% of good scripts correctly. These results are published in Malware 2009, ACM DSMM '09, and ACM CCS '09 in poster session. This detection rate is already useful in real-time detection, especially when blacklists are not up to date and static and dynamic analysis imposes too much delay for web surfing. To improve the detection even further, we are currently building more detailed-blacklists using our crawlers.
<b>MAR.17</b>	Jayanth Gummaraju, Advanced Micro Devices, Sunnyvale, CA <b>CPU vs. GPU: When Worlds Collide</b> CPUs and graphics processing units (GPUs) have been evolving independently, attaining preeminence in their own domains. Recently, they've been encroaching on each others' turf, setting the stage for drastic changes in software design and applications. This talk will review the current trends in CPU and GPU evolution, and suggest likely challenges and opportunities for the exciting times that lie ahead.
<b>MAR.24</b>	John King, Solairus Aviation, Petaluma, CA <b>The Outside World, as Viewed From the Eyes of a Computer Scientist</b> The world looks very different to someone armed with a degree in computer science versus just about any other discipline. The fundamental understanding of these technologies, tools and skills can be a tremendous asset even if one never pursues opportunities that involve writing a single line of code or building systems. We will dissect the travels of a computer scientist (using the term loosely) who spent a thirty-six year career in a variety of endeavors other than the one envisioned when that coveted degree was granted. The discussion is intended to spur some thought on the nontraditional uses of a background in computer science and the acquisition of some complementary knowledge before completing your studies.
<b>MAR.31</b>	CESAR CHAVEZ HOLIDAY (No Lecture)
<b>APR.07</b>	Kamakshi Sivaramakrishnan, Google, Mountain View, CA <b>Display Advertising in Mobile</b> Modern smart phones and mobile web browsers display advertisements on consumer properties like the iPhone/Android apps and mobile versions of popular content publishers like m.espn.com, m.cnn.com, m.nytimes.com, etc. Similar to traditional ad-supported online web content model, mobile web content is also supported by advertisements as revenue models. Such a revenue model relies on market mechanisms to elicit prices for these advertisements, making use of an auction among advertisers who bid in order to have their ads shown. These advertisers, depending on the context of either web or mobile, target either keywords, content and mobile traffic profile respectively. The ad placement problem involves three parties--advertisers, publishers, and auctioneer (or ad network)--we present cutting edge algorithmic techniques that jointly optimize the goal for each of these parties. A commonly used business model in digital ad placements is pay-per-click where the advertiser participates in the auction for an ad impression by expressing a value for a possible click on the impression. As a result, the auctioneer actively tries to solve a critical problem, i.e., to predict the probability of click-through, commonly known as click-through rate. The algorithms for click-through rate prediction, traffic allocation and pricing use techniques from three mathematical areas: mechanism design, optimization, and statistical estimation. We present an overview of the statistical techniques that estimate the competitiveness of an ad and hence traffic it would receive when participating in the auction. The discussions will be generalized to the problem of digital advertising with topical references to the mobile advertising context at relevant points through the talk.
<b>APR.14</b>	V. Scott Gordon, Computer Science, California State University, Sacramento, CA <b>Stereoscopy With Neural Network Hardware</b> Radial basis neural networks are becoming increasingly popular for computer vision. A hardware implementation produced right here in Petaluma is being used in a variety of real-world applications, from detecting glass manufacturing imperfections to bin packing on Nordic fishing boats. This talk will show how these neural network boards are being used for real-time stereoscopic tracking.
<b>APR.21</b>	SPRING BREAK (No lecture)
<b>APR.28</b>	Jason Shankel, The Stupid Fun Club <b>Artificial Metaphors</b> As computer storage, power and access to information increase, and the cost of computer game production rises, intelligent agents that can convincingly mimic human thought are become more viable and valuable. Let's examine the role of metaphor in human thought and in the development of artificial intelligence system. <b>Pizza after talk in Darwin 28</b>
<b>MAY.05</b>	TBA
<b>MAY.12</b>	STUDENT PRESENTATIONS <b>SHORT PRESENTATIONS OF RESEARCH CARRIED OUT BY SONOMA STATE COMPUTER SCIENCE STUDENTS</b> <b>Pizza during talks in Salazar 2016</b>
<b>MAY.19</b>	END OF SEMESTER CELEBRATION <b>AWARDS PRESENTED TO SONOMA STATE COMPUTER SCIENCE MAJORS</b> <b>Pizza during talks in Salazar 2016</b>



Computer Science Department, Sonoma State University, Rohnert Park, CA 94928  
(707) 664-2667

<http://www.cs.sonoma.edu>

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