

# COMPUTER SCIENCE COLLOQUIUM

Forty-Seventh SERIES Fall 2017

THURSDAYS AT NOON SALAZAR 2016

Sep. 07	<b>Levent Ertaul, California State University, East Bay</b> <b>CYBER SECURITY-PRIVACY: ARE WE ALL LIVING IN GLASS HOUSES? CAN I GET SOME PRIVACY, PLEASE?</b> Cyber security, cyberwar, hacking, privacy, and governmental/personal data breaches... We keep hearing these with increasing frequency repeatedly. This creates a cyber anxiety everywhere. On top of that we, as ordinary people started to learn that corporations and governments all around the world keep track of our personal data. For example, mobile phones constantly provide information about our location to service providers. Google knows what we are thinking about from our personal online searches. Facebook can see who our friends are. Yahoo knows the type of news we are interested in. Our online shopping patterns are recorded. Governments are launching surveillance programs to collect our personal data on the cyber space. AS the list goes on... It is as if we are all living in glass houses in which we do not have any privacy or cannot keep any secrets anymore. Cyber security issues affect everyone. Most of all they affect us individuals. That is why ignorance is not bliss in cyber security. Every day we face new questions, new challenges from our rights and responsibilities as citizens of the cyber world to how to protect ourselves, if we can, from new types of security threats. In this talk, I will try to explain vulnerabilities and security issues in the cyber space along with what we can and cannot do to protect ourselves.
Sep. 14	<b>Maya Ackerman, San Jose State University</b> <b>ALGORITHMIC SONGWRITING</b> Songwriting, the art of combining melodies and lyrics, poses new challenges to algorithmic composition. ALYSIA is a machine-learning system that learns the relationship between melodies and lyrics, and uses the resulting model to create new songs in the style of the corpus. While ALYSIA creates melodies for user-provided lyrics, another system, MABLE, creates computer-generated lyrics that convey a coherent story. Original works created with the systems will be shown.
Sep. 21	<b>Mohammad Pourhomayoun, Cal State University, Los Angeles</b> <b>DATA ANALYTICS: A CASE STUDY IN HEALTHCARE</b> The increasing cost of chronic disease management demands novel technological solutions that shift healthcare services from clinical and hospital settings to a remote and homebound scenario. Alternative and innovative technologies such as Remote Health Monitoring Systems, Big Data Analytics, and Wireless Health Technologies allow for collecting physiological and contextual data from patients, and providing unique opportunities for real-time data analytics to predict health conditions and prevent medically adverse events. The development of effective predictive models and big data analytics systems, however, faces several fundamental challenges regarding their robustness, scalability, and real-time processing of big heterogeneous data. These challenges necessitate the design and development of robust and scalable data processing techniques based on advanced machine learning algorithms that can efficiently extract the information from physiological data and allow for knowledge discovery and analysis. This talk presents a research methodology for data analytics in next-generation remote health management platforms.
Sep. 28	<b>Adam S. Carter, Humboldt State University</b> <b>USING SOCIAL PROGRAMMING ENVIRONMENTS TO IMPROVE COMPUTING EDUCATION</b> At only 46%, computing has one of the lowest baccalaureate retention rates. This statistic is especially distressing given the upward trend in demand for computing professionals. To address this problem, I employ social programming environments (SPEs) to explore the application and impact of social learning theory on students enrolled in computing courses. Unlike traditional integrated development environments, SPEs provide students with opportunities to form learning communities and to engage other classmates in both formal and informal discussions. Even though participation within a learning community is positively linked to retention, such communities are frequently absent in early computing courses.
Oct. 05	<b>Mehrdad Aliasgari, California State University, Long Beach</b> <b>SECURE COMPUTATION AND ITS APPLICATIONS</b> Data is either stored, transmitted or used in computation. Information security aims to provide protection at all the stages of data. Traditional encryption algorithms help us achieve security for data at storage and transmission. However, in order to provide security while executing a function on private data, we need a completely new set of tools. In this talk, we look at secure computation, its applications and challenges that lie ahead.
Oct. 12	<b>Jason Shankel, Roblox</b> <b>THIS GAMING LIFE</b> In this talk Jason Shankel, a 25-year veteran of the gaming industry, will describe the changes the industry has gone through over the past three decades and what it takes to make it in the world of gaming today
Oct. 19	<b>William Wang, University of California, Santa Barbara</b> <b>NATURAL LANGUAGE PROCESSING FOR FAKE NEWS DETECTION</b> In this past election cycle for the 45th President of the United States, the world has witnessed a growing epidemic of fake news. The plague of fake news not only poses serious threats to the integrity of journalism, but has also created turmoil in the political and actual world. However, statistical approaches to combating fake news has been dramatically limited by the lack of labeled benchmark datasets. In this talk, we will describe LIAR: a new, publicly available dataset for fake news detection. We collected a decade-long, 12.8K manually labeled short statements in various contexts from <a href="http://POLITIFACT.COM">POLITIFACT.COM</a> , which provides detailed analysis report and links to source documents for each case. This dataset can be used for fact-checking research as well. Notably, this new dataset is an order of magnitude larger than previously largest public fake news datasets of similar type. Empirically, we investigate automatic fake news detection based on surface-level linguistic patterns. We have designed a novel, hybrid convolutional neural network to integrate metadata with text. We show that this hybrid approach can improve a text-only deep learning model. We will outline future directions, and conclude this talk by discussing related technologies in natural language processing
Oct. 26	<b>Theodore Kim, Pixar, Emeryville</b> <b>SIMULATING JUST ENOUGH NON-LINEARITY</b> Most of the physical phenomena that are relevant to computer animation are inherently non-linear. These include the equations governing the flow of smoke and water, as well as the dynamics of skin and flesh. Which of these non-linearity's are visually important, and which just introduce unnecessary trouble? In this talk, I will examine a few case studies.
Nov. 02	<b>Miriam R. L. Petruck, International Computer Science Institute, UC Berkeley</b> <b>FRAMENET AND NATURAL LANGUAGE PROCESSING</b> This talk presents an overview of FrameNet, a research project in corpus-based computational lexicography, based on the principles of Frame Semantics (e.g. Fillmore 1985, inter alia). FrameNet's initial goals included providing information about the valences, i.e., the semantic and syntactic combinatorial possibilities for the vocabulary of contemporary English, and documented by corpus findings. Initially developed primarily as a lexicographic effort, FrameNet data are used in a range of Natural Language Processing (NLP) tasks, including Semantic Role Labeling (e.g. Das et al. 2014, Roth & Lapata, 2015, Roth 2016), Question Answering (e.g. Sinha 2008, Ofoghi 2009, He et al. 2015) Information Extraction (e.g. Harabagiu & Bejan 2010, Zhang et al. 2010, Søgaard et al. 2015), and Sentiment Analysis (Ruppenhoffer & Rehbi 2012, Ruppenhoffer 2013), to name a few. In addition to reporting on recent developments in FrameNet, this presentation will address the implications of these developments for NLP.
Nov. 09	<b>Richard Lamb, ICANN</b> <b>KEYS, HOLLYWOOD, AND HISTORY: THE TRUTH ABOUT ICANN, DNSSEC, AND THE ROOT KEY</b> For better or worse, Internet security has gained notoriety recently and with it greater interest in some humble key management operations. Specifically, much has been made by Hollywood of the role of those incorrectly referred to as the "7 key holders" of the Internet and ICANN. As the original architect of the DNSSEC root key management system, Rick will describe the truth, unwritten or otherwise, behind this humble, trusted operation and how it came to be. Along the way he hopes to trick participants into learning about DNS, DNS Security Extensions, and how we might all benefit from innovation on this infrastructure.
Nov. 16	<b>Fay Zhong, California State University, East Bay</b> <b>THE MAXIMUM COMMUNITY PARTITION PROBLEM IN NETWORKS</b> Many network systems of interest are rising from real world networks, e.g. social networks and biological networks. One typical issue considered by researchers is how to find the community structures in those networks. We proposed a community structure detection problem, which aims to analyze the relationships among the data via the network topology. We collect a series of unified definitions for community structures and formulate the community structure detection into a combinatorial optimization problem to identify as many communities as possible for a given network, and develop a heuristic algorithm based on greedy strategy. The experimental results on real networks show that the proposed algorithm is effective in terms of the number of valid communities and the modularity score,
Nov. 23	<b>THANKSGIVING BREAK (NO COLLOQUIUM)</b>
Nov. 30	<b>STUDENT PRESENTATIONS (Pizza during talks in Salazar 2016)</b> <b>SHORT PRESENTATIONS OF RESEARCH CARRIED OUT BY SONOMA STATE COMPUTER SCIENCE STUDENTS</b>
Dec. 07	<b>END OF SEMESTER CELEBRATION &amp; AWARDS (Pizza during talks in Salazar 2016)</b> <b>AWARDS PRESENTED TO SONOMA STATE COMPUTER SCIENCE MAJORS.</b>

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