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Lara Deek

Curriculum Vitae

PARTICULARS

EDUCATION

University of California, Santa Barbara
Ph.D. in Computer Science

Santa Barbara, CA
expected graduation date: June 2013

American University of Beirut
B.E. Computer and Communications Engineering
(*Dean's Honor List*)

Beirut, Lebanon
June 2008

RESEARCH INTERESTS

My interests span the areas of wireless networks in general, and dynamic radio resource management in emerging wireless networks in particular.

PUBLICATIONS

- [1] Lara Deek, Eduard Garcia-Villegas, Elizabeth Belding, Sung-Ju Lee, and Kevin Almeroth. The impact of channel bonding on 802.11n network management. In *ACM CoNext*, Dec. 2011.
- [2] Lara Deek, Xia Zhou, Kevin Almeroth, and Haitao Zheng. To preempt or not: Tackling bid and time-based cheating in online spectrum auctions. In *IEEE Infocom*, Apr. 2011.
- [3] Mike P. Wittie, Veljko Pejovic, Lara Deek, Kevin Almeroth, and Ben Zhao. Exploiting locality of interest in online social networks. In *ACM CoNext*, Nov. 2010.
- [4] Khaled Harras, Lara Deek, Caitlin Holman, and Kevin Almeroth. DBS-IC: An adaptive data bundling system for intermittent connectivity. In *Computer Communications*. Mar. 2009.
- [5] Lara Deek, Kevin Almeroth, Mike P. Wittie, and Khaled Harras. Exploiting parallel networks using dynamic channel scheduling. In *Wireless Internet Conference (WiCon)*, Nov. 2008.
- [6] Lara Deek, Sara Thoubian, Serouj Jamijian, Khaled Harras, and Hassan Artail. Exploiting parallel networks in intermittently-connected mobile environments. In *IEEE Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*, Oct. 2008.

RESEARCH PROJECTS

- **The IEEE 802.11n Standard in WLANs**

2010 - Present

IEEE 802.11n is a next generation wireless LAN technology which adds major upgrades to legacy IEEE 802.11a/b/g clients. These upgrades feature multiple-input-multiple (MIMO) transmission schemes, channel bonding two 20MHz channels into a single 40MHz channel, as well as operating

in the 5GHz frequency range. These features provide greater opportunities to exploit the existing bandwidth. Although each feature alone provides benefits over previous legacy clients, it is only through understanding the behavior of these features can efficient strategies of utilizing them be proposed. In our work, we focus on achieving an understanding of 802.11n features in WLANs [1].

- **Online Spectrum Auctions** 2009 - 2010

Online spectrum auctions provide flexibility by allowing users to obtain spectrum in a real-time manner. Such flexibility, however, creates vulnerabilities to bidder manipulations, whereby bidders can rig their bid to gain an unfair advantage. In our work, we propose an online spectrum auction *Topaz* which distributes spectrum efficiently while discouraging bidders from misreporting their bids or availability times [2]. Furthermore, *Topaz* introduces a preemptive mechanism which improves auctioneer revenue at a minimum cost to spectrum efficiency.

- **Locality of Interest in Online Social Networks (OSN)** 2009 - 2010

Online social networks have gained immense popularity and a large user-base worldwide. In this work, we analyze the behavior of Facebook users through real-world OSN trace and show that a significant percentage of user interactions are local. These findings motivate the need for a distributed OSN architecture that improves performance for geographically dispersed users [3].

- **Concurrent Use of Heterogeneous Networks** 2008- 2009

Modern mobile devices are equipped with multiple wireless technologies. With this development, it is not a surprise to find a single user with many connection opportunities. Traditionally, devices have either used one interface at a time or have primarily used one interface for particular transmissions, such as either data packets or control packets. In our work, we focus on methods of concurrently using multiple radios, such as WiFi, cellular, and satellite, while addressing the major challenges of doing so. The challenges include (1) recognizing and monitoring the characteristics of each wireless technology, such as performance and state, (2) determining efficient assignments of transmissions to radio interfaces, (3) identifying the utilization cost factor, and (4) determining the way by which networks can be utilized to better serve different network applications [6, 5].

- **Protocol for Intermittently-Connected Mobile Networks** 2006

Applications running on mobile devices, such as web, or email, suffer greatly from degraded performance due to intermittent connectivity. This phenomenon is exemplified by the fact that an incompletely transmitted data transfer can not be viewed by the receiver due to missing packets. Therefore, any incomplete transmission is made inaccessible and useless. My project involved designing a system which predicts and adapts packet size to changing network conditions, namely connectivity and throughput. The performance of the system was measured in terms of the amount of viewable data the user receives per connection period [4]. This work is motivated by related work on a Data Bundling System for Intermittent Connectivity.

TEACHING EXPERIENCE

- **Teaching Assistant for UCSB CMPSC 130A:** Data Structures and Algorithms *Summer 2010*
- **Teaching Assistant for UCSB CMPSC 276:** Advanced Computer Networks *Fall 2009*
- **Teaching Assistant for UCSB CMPSC 176A:** Computer Networks *Sprint 2009 - Fall 2008*
Based on student reviews for CMPSC 176A in Spring 2009, I was awarded the Computer Science Outstanding Teaching Assistant Award.
- **Teaching Assistant for UCSB CMPSC 162:** Programming Languages *Winter 2009*

WORK EXPERIENCE

- **Research Intern, HP Research Labs, Palo Alto** *August 2011 to Present*

- **Research Assistant, UCSB** *June 2008 to Present*

I have identified and pursued research problems in the areas of wireless networking and dynamic radio resource management. I have also contributed ideas to a grant proposal, which is funded, and I am currently working on, in collaboration with industry.

- **Intern, Akamai** *Summer 2009*

I worked in Sanjay Hegde's group. My work involved implementing a TCP protocol with configurable parameters over NS-2. My project also involved creating practical network configurations and evaluating the protocol under varying network conditions.

- **Research Intern, UCSB** *Summer 2006*

I was a research intern in the Research Internships in Science and Engineering (RISE) program at UCSB. My Principle Investigator was Professor Kevin Almeroth and my mentor was Dr. Khaled Harras. I worked on designing a system that adapts data delivery size in an intermittently connected environment based on a connectivity history and channel information. A journal paper was achieved from this internship [4].

GRADUATE COURSEWORK

- **University of California, Santa Barbara**, Santa Barbara, CA

- CS 284: Mobile Computing *Winter 2011*
- CS 595N: The Technology and Society Seminar *Spring 2010*
- CS 290F: Special Topics: Multimedia Networking *Winter 2010*
- CS 231: Combinatorial Algorithms *Fall 2009*
- CS 290F: Special Topics: Online Social Networks *Spring 2009*
- CS 290F: Special Topics: Wireless Networks *Spring 2009*
- CS 230: Advanced Data Structures and Algorithms *Winter 2009*
- CS 276: Advanced Computer Networks *Fall 2008*
- CS 594: Academic Writing *Fall 2008*

SERVICE

- Chair and TPC Member, UCSB Graduate Student Workshop on Computing (GSWC) *2011*
- Graduate Student Representative, UCSB *2009-2011*
- Co-Chair and TPC Member, UCSB Graduate Student Workshop on Computing (GSWC) *2010*
- Panel Organizer and Panelist, Grace Hopper *2010*

The panel was titled "Beyond Your Technical Skills: the Power of Words" and targeted professional women in computing. Through this panel, we hoped to increase awareness about the importance of developing excellent communication skills in various professional endeavors. We hold that, scientists who will lead our discipline are those not only with sound analytical skills, but those who partner their technical accomplishments with excellent communication skills. Excellent presenting/writing

skills are fundamental requirements for professional success and impact one's ability to be recognized and accepted in a range of professional contexts.

The panel brought together professionals at various stages of development who have experience in both academia and industry: an associate professor from Columbia University, a post-doc from MIT, a graduating PhD student from Columbia University, and a third year PhD student from UCSB (myself). Each panel member discussed their experiences and the skills they have acquired. The panel was also moderated by a Professor in Linguistics, from both UCSB and Columbia University, who discussed a few fundamental principles for effective scientific delivery.

- Organizer of N²Women Meeting, MobiCom/Hoc 2010
- President of the Women in Computer Science (WiCS), UCSB 2009-2010
- Publishing Chair and Industry Liaison, UCSB Graduate Student Workshop on Computing (GSWC) 2009
- Vice-President of the Women in Computer Science (WiCS), UCSB 2008-2009
- Reviewer for journals: IEEE/ACM Transactions on Networking, IEEE Transactions on Mobile Computing

AWARDS

- N²Women Student Fellowship for MobiCom/MobiHoc, U.S.A. 2010
- N²Women Student Travel Award for MobiCom/MobiHoc, U.S.A. 2010
- Grace Hopper Celebration of Women in Computing Scholarship, U.S.A. 2010
- Graduate Opportunity Fellowship, UCSB 2010
- UCSB Computer Science Outstanding Teaching Assistant Spring 2009
- Google Workshop for Women Engineers (GWWE) 2009

REFERENCES

Academic Co-Advisor

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