Tolerable Delay: Overcoming Intermittent Connectivity with Entity Centered Systems and Applications

Corey Baker
Assistant Professor
Department of Computer Science
University of Kentucky

Wednesday, March 29, 2023
10:00am – 11:00am
EEB 132
Zoom Link: https://usc.zoom.us/j/94295584258?pwd=VzlITkJaa1FBQ05ERFYvRXZ2MUwvUT09

Abstract: Reliance on Internet connectivity is detrimental where modern networking technology is lacking, power outages are frequent, or network connectivity is expensive, sparse, or non-existent (i.e., underserved urban communities, rural areas, natural disasters). Though there has been much research conducted around 5G and 6G serving as the conduit for connecting any and everything; scalability issues are a major concern and real-world deployments have been limited. Realization of the limitations resulting from reliance on Internet and cellular connectivity are prevalent in mHealth applications where remote patient monitoring has improved the timeliness of clinical decision making, decreased the length of hospital stays, and reduced mortality rates everywhere in the nation except in medically underserved and rural communities in the US like Appalachian Kentucky, where chronic disease is approximately 20% more prevalent than other areas. As an alternative, deploying resilient networking technology can facilitate the flow of information in resource-deprived environments to disseminate non-emergency, but life saving data. In addition, leveraging opportunistic communication can supplement cellular networks to assist with keeping communication channels open during high-use and extreme situations. This talk will discuss the pragmatic applications of designing opportunistic systems for particular entities (patients, citizens, etc.); specifically applied to healthcare and empowering low-cost smart cities, permitting any community to become smart and connected while simultaneously keeping network connectivity costs to a minimum.

Bio: Corey E Baker, PhD, is an Assistant Professor in the Department of Computer Science at the University of Kentucky (UK). His work centers around making data accessible in the midst of intermittent and limited connectivity while minimizing delay. He currently a directs the Network Reconnaissance (NetRecon) Lab where his research investigates full stack systems for distributing, protecting, and authenticating data in opportunistic networking scenarios for rural remote patient monitoring, smart cities, and natural disasters to improve the livelihood of people. Professor Baker received a B.S. degree in Computer Engineering (CE) from San Jose State University (SJSU), a M.S. in Electrical and Computer Engineering (ECE) from California State University, Los Angeles (CSULA), and M.S. and Ph.D. degrees in CE from the University of Florida (UF). After the completion of his graduate studies, Baker was a University of California Presidents Postdoctoral Fellow in the ECE department at the University of California San Diego (UCSD) and a Visiting Scholar in the ECE department at the University of Southern California (USC). In 2019, Dr. Baker received the UK Inclusive Excellence Award for his work in creating a graduate campus visit program and diversifying Computer Science and the College of Engineering at the doctoral level. Baker is currently the Region 6 (West Coast) Advisory Board Chairperson for the National Society of Black Engineers.

Hosts: Dr Massoud Pedram, pedram@usc.edu
Dr Sandeep Gupta, sandeep@usc.edu