

Mostafa Uddin

Present Address

Department of Computer Science
Old Dominion University
E&CS Room 3106A
Norfolk, VA 02139

Contact

muddin@cs.odu.edu
(414)379-5199
<http://www.cs.odu.edu/~muddin>

Objective

A Research or Software Engineering intern position.

Research Interest My research interest spans in various areas of **Mobile Computing** and **Wireless Network**. I am interested in developing systems and applications that involves with Smart devices, Wi-Fi, Bluetooth, Acoustic communication, Sensing technology, Signal processing, and Applied Machine learning technique. In developing such systems and applications, I address research challenges that requires profound knowledge about the physical world, and the user's mobility and context. Recently, I have been addressing research challenges in developing performance, privacy and energy efficiency of the wireless communication for the smart devices. Moreover, I have been involved in developing real-world applications that exploits the intelligent sensing capabilities of the smart devices in the area of Health Informatics, Smart Home, and Intelligent Transportation System (ITS).

Education

Old Dominion University, Norfolk, VA, USA
PhD in Computer Science (2011 - present)
Advisor: Dr. Tamer Nadeem (nadeem@cs.odu.edu)
CGPA 3.98/4.0

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh
B.S. in Computer Science and Engineering, 2006
CGPA 3.72/4.0

Experience

Research Assistant, Computer Science, ODU, Norfolk, VA **Fall 2011-present**
Advisor: **Dr. Tamer Nadeem**, Assistant Professor

- **TrafficVision**: In this project, we design and develop modules that extend the SDN's layer architecture to have fine-grained and real-time traffic-awareness at the network edge. We extend the SDN's data layer and Southbound-API to extract new traffic flow feature, that allow us to develop tool (e.g. *TrafficVision*) in the control layer to have scalable, economic and flexible solutions of classifying the network traffic flows based on novel Machine-Learning (ML) technique. This is a collaboration research project with HP Labs, Palo Alto, CA.
- **CHKD**: In this project, we use accelerometer, gyroscope, and compass sensors of the smartphone to build an automatic tool to create spaghetti diagrams of movements of personnel in a non-intrusive way.
- **meSDN**: In this project, we extend the SDN framework to the client devices to provide services such as WLAN virtualization with end-to-end QoS. This is a collaboration research project with HP Labs, Palo Alto, CA.
- **Audio-WiFi**: In this project, we build a novel framework that integrate the Audio interface (mic, speaker, and sound driver) with the Wi-Fi Interface to develop a more efficient Wi-Fi network communication for smart devices.
- **MagnoTricorder**: In this project, we leverage the effect of Electro Magnetic Interference (EMI) generated by the AC current in the main power-line at home to identifying and detecting the running devices. In this project we use magnetic field sensor of the smartphone, signal processing, and machine learning technique to build the system.

- **EnergySniffer:** In this project we use the acoustic sensors of the smartphone to identify the running machines at home. We use signal processing and machine learning technique to build such system.
- **ParkZoom:** This is an infrastructure aided smartphone sensing based parking localization system. This is a collaboration project with Siemens Corporate Research to develop smart parking system.

Teaching Assistant, Computer Science, ODU, Norfolk, VA **Fall 2011-present**

- CS300 - Computer in Society, Fall 2011.
- CS250 - Programming and Problem Solving II, Spring 2012.
- CS495/595 - App Development for Smart Devices, Fall 2012.
- CS495/595 - App Development for Smart Devices, Fall 2013.

Research Associate Intern, HP Labs, Palo Alto, CA **July,2013 - August,2013**

Mentor: **Kyu-Han KIM**, Senior Researcher and Research Manager

- Leveraging both the cellular (i.e. LTE) and the WiFi interface of the smartphone for improving the performance of the peer-to-peer real-time interactive applications such as Skype video chat, Google Hangout, Viber voice call etc.
- Hack the network stack of the Nexus 7 tablet (LTE) to implement the Multi-Path UDP(MPUDP) in the transportation layer of the android kernel.
- Experimental evaluation of our system using 2 Nexus 7 tablet (android device) using AT&T vendors

Research Associate Intern, HP Labs, Palo Alto, CA **May,2013 - August,2013**

Mentor: **Jeongkeun Lee**, Senior Research Scientist

- Extending the SDN framework to the wireless end devices.
- WLAN virtualization with performance guarantee.
- Implementing customized Qdisc for Linux Network stack.
- Implementing required interaction between WiFi driver and Linux Qdisc.
- Deploying open vSwitch in Android platform using cross-platform compiling.

Software Engineer, KAZ (www.kaz.com.bd), Dhaka, Bangladesh **Feb '08-Dec '09**

- Research and Development in ITE Enterprise project, an international tax management tool.
- Developing an installer and auto updating mechanism using InstallShield 2008 for the ITE Enterprise product.
- Programming in C#, WCF and WPF.

Software Engineer, SDSL(www.sdslbd.com), Dhaka, Bangladesh **Nov '06-Feb '08**

- GPS based Real-Time Navigation system for Mobile devices using Symbian C++/S60.
- Instant Mobile Messenger Application for Mobile devices in Symbian OS.
- Developing Mobile Map(<http://maps.afrigis.co.za/mobi/splash.html>), a J2ME mobile application.
- Developing GRID(<http://www.thegrid.co.za/about>), a J2ME mobile application.

Software Engineer Intern Vertex Limited, Dhaka, Bangladesh **Dec '05 - May '06**

- Developing software for the RTA-600 Time attendance device. (Java)

**Computer
Skills**

Programming Skill:	C/C++, Java, Python, C#, SQL, JavaScript/CSS/D3, nesC
Technical Skill	Android Programming, Linux Kernel Programming, Linux Network Stack (IP, Qdisc, Bridge, Core, mac80211 etc.) hacking, Wireless Driver Hacking(Qualcomm, Broadcom, TI etc.) Audio Driver Hacking (ALSA), Signal Processing, Machine learning, Smartphone Power Monitoring(Monsoon), USRP and GNU Radio, MATLAB, Octave, Weka-Data mining tool, TinyOS- TelosB Sensor.

Papers:

- TrafficVision: A Case for a Network Edge SDN for Fine-Grained Real-Time Traffic-Awareness (in Preparation)
Mostafa Uddin, Gowtham Bellala, Jeongkeun Lee, and Tamer Nadeem
- SafeWLAN: A WLAN-based SDN Approach for Securing WLAN Traffic(In Review)
Mostafa Uddin, Ashish Kshirsagar, and Tamer Nadeem
- Harmony: Content Resolution using Acoustic Channel (acceptance rate 19% = 316/1640) [To appear]
Mostafa Uddin, and Tamer Nadeem
IEEE INFOCOM 2015
- meSDN: mobile extension of SDN
Jeongkeun Lee, Mostafa Uddin, JeanTourrilhes, Souvik Sen, Sujata Banerjee, Manfred Arndt, Kyu-Han Kim, Tamer Nadeem
ACM MCS 2014 (with MobiSys 2014).
- SpyLoc: A Light Weight Localization System for Smartphones.(acceptance rate 19.8% = 68/342)
Mostafa Uddin and Tamer Nadeem
IEEE SECON 2014.
- SmartSpaghetti: Accurate and Robust Tracking of Human's Location
Mostafa Uddin, Ajay Gupta, Kurt Maly, Tamer Nadeem, Sandip Godambe, Arno Zaritsky
IEEE-EMBS International Conferences on Biomedical and Health Informatics, 2014
- SmartSpaghetti: Use of Smart Devices to Solve Health Care Problems (Full Paper acceptance rate=18%)
Mostafa Uddin, Ajay Gupta, Kurt Maly, Tamer Nadeem, Sandip Godambe, and Arno Zaritsky
International Workshop on Biomedical and Health Informatics, BIBM 2013
- RF-Beep: A light ranging scheme for smart devices (acceptance rate 11.2% = 19/170(full paper))
Mostafa Uddin and Tamer Nadeem
IEEE PerCom 2013.
- A2PSM: Audio Assisted Wi-Fi Power Saving Mechanism for Smart Devices(acceptance rate 31.5%)
Mostafa Uddin and Tamer Nadeem
ACM HotMobile 2013.
- MagnoTricorder: What You Need To Do Before Leaving Home
Mostafa Uddin and Tamer Nadeem
ACM HomeSys, UbiComp 2012
- EnergySniffer: Home Energy Monitoring System using Smart Phones [Slide]
Mostafa Uddin and Tamer Nadeem
IEEE IWCMC, 2012.

Articles:	<ul style="list-style-type: none"> • Report of HotMobile 2012 Igor Pernek, Mostafa Uddin and Jack Fernando Bravo Torres IEEE Pervasive Computing. • HotMobile 2012 Poster: MachineSense: Detecting and Monitoring Active Machines using Smart Phone Mostafa Uddin and Tamer Nadeem ACM SIGMOBILE MC2R. • HotMobile 2012 Poster: Audio-WiFi: Audio Channel Assisted WiFi Network for Smart Phones Mostafa Uddin and Tamer Nadeem ACM SIGMOBILE MC2R.
Demos/Posters:	<ul style="list-style-type: none"> • Poster: Extending SDN for mobile device Jeongkeun Lee, Mostafa Uddin, Jean Tourrilhes, Souvik Sen, Sujata Banerjee, Manfred Arndt and Tamer Nadeem ACM HotMobile 2014 • SpyLoc: a Light Weight Localization System for Smartphones [Poster][SRC Presentation] Mostafa Uddin and Tamer Nadeem In Proceedings of MobiCom'13 • Audio-WiFi: Audio Channel Assisted WiFi Network for Smart Phones[Demo] Mostafa Uddin and Tamer Nadeem IEEE INFOCOM, 2012 . • EnergySniffer: Home Energy Monitoring System using Smart Phones[Poster] Mostafa Uddin and Tamer Nadeem IEEE INFOCOM, 2012 . • MachineSense: Detecting and Monitoring Active Machines using Smart Phones[Poster] Mostafa Uddin and Tamer Nadeem ACM HotMobile, 2012 .
Patents and Invention Disclosures	Jung Gun Lee, Mostafa Abdulla Zahid Uddin, Jean Tourrilhes, Souvik Sen, Manfred R Arndt. "Wireless Software-Defined Networking", Patent Application Filed on Oct 2013.
News/Media	Researchers develop sound way to improve smartphone battery life(V3 online Magazine)
Awards	ACM SIGMOBILE Travel grant for attending HotMobile 2014. Microsoft Research "ACM SRC" Grant Recipient for MobiCom 2013, Miami, FL. NSF Student Travel Grant Recipient for MobiCom 2013, Miami, FL. NSF Travel grant for attending IEEE PerCom 2013. ACM SIGMOBILE Travel grant for attending HotMobile 2013. Outstanding RA (fall 2012) - Computer Science Department. Travel grant for attending HoMobile 2012, INFOCOM 2012, and Ubicomp2012(from CS Department of ODU). Dominion Graduate Scholar offered by College of Sciences ODU. Dean's List Scholarship during undergraduate studies at BUET. Placed in top 1% in Higher Secondary Exam (A-level) in Bangladesh. Placed in top 1% in Secondary School Exam (O-level) in Bangladesh.

**Professional
Services**

Student Volunteer in MobiCom'2013, HotMobile'2013, HotMobile'2014, DriveSense'2014
Invited Reviewer IEEE Internet of Things Journal (IoT)
Reviewer through Advisor: ACM HotMobile 2015, IEEE SECON 2015, IEEE ICC
2014, IEEE PerCom'2014, IEEE Globecom' 2013, IEEE IWCMC'2013.

**Membership &
Activities**

ACM SIGMOBILE Student Member
ACM Student Member