



PERSONAL INFORMATION

R&D Scientist — General Motors
Electrical & Controls Systems Group
Warren, Michigan
Country of Residence: **USA**

Work Email: kamran.1.ali@gm.com
kamran.luminite@gmail.com
<https://msu.edu/~alikamr3/>
Country of Origin: **Pakistan**

RESEARCH INTERESTS

Wireless Communications, Sensing Systems, Machine Learning, Signal Processing, Mobile Computing & Sensing, Internet of Things, Pervasive Computing, Data Science, System Performance Modeling

RELEVANT ADVANCED COURSES

Detection & Estimation Theory, Stochastic Processes & Applied Probability, Digital Signal Processing, Deep Learning, Machine Learning, Data Mining, Design & Theory of Algorithms, Embedded Systems Design, Digital System Design, Distributed Systems/Advanced Operating Systems, Wireless Communications, Digital Communications, Information Theory, Error Correction Coding, Computer & Network Security

EDUCATION

Michigan State University, East Lansing, Michigan, USA

MS-PhD Computer Science and Engineering

Aug 2014 to Dec 2019

- Thesis: *Signal Processing and Machine Learning Approaches to Enabling Advanced Sensing and Networking Capabilities in Everyday Infrastructure and Electronics*
- Prominent works: *Human Activity/Gesture Recognition Using WiFi, RFID and mmWave Signals, Sleep Monitoring Using WiFi Signals, Fine-grained Vibration Based Sensing for Smartphones, Gesture Based Authentication on Smartphones, Distributed Spectrum Sharing in Powerline Communications*
- Advisor: Dr. Alex Liu (PhD University of Texas, Austin, USA)

Lahore University Of Management Sciences, Lahore, Pakistan

B.S. Major: Electrical Engineering, Minor: Computer Sciences

June 2013

- Thesis Topic: *Outlier/Event Detection, Identification and Localization for Wireless Sensor Networks in Harsh Environments with Hardware Implementation on EZ430-2500 TI Motes*
- Advisor: Dr. Ijaz Haider Naqvi (PhD INSA, France)

CONFERENCE PUBLICA- TIONS

Kamran Ali, Alex X. Liu, Ioannis Pefkianakis, Kyu-Han Kim. "Distributed Spectrum Sharing for Enterprise Powerline Communication Networks". In *IEEE International Conference on Network Protocols (ICNP)*, Cambridge, UK, September 2018. Acceptance rate: $35/197 = 17.6\%$

Xinyu Lei, Guan-Hua Tu, Alex X. Liu, Kamran Ali, Chi-Yu Li, Tian Xie. "The Insecurity of Home Digital Voice Assistants - Vulnerabilities, Attacks and Countermeasures". In *IEEE Conference on Communications and Network Security (CNS)*, Beijing, May 2018.

Kamran Ali, Ioannis Pefkianakis, Alex X. Liu, Kyu-Han Kim. "Boosting Powerline Communication (PLC) Networks for High-Speed Ubiquitous Connectivity in Enterprises". In *IEEE International Conference on Network Protocols (ICNP)*, Singapore, 2016. [Extended Abstract] Acceptance rate: $46/229=20.1\%$

Kamran Ali, Alex X. Liu, Wei Wang, and Muhammad Shahzad. "Keystroke Recognition Using WiFi Signals". In *ACM Proceedings of the 21th Annual International Conference on Mobile Computing and Networking (MOBICOM)*, Paris, France, September 2015. Acceptance rate: $38/207 = 18.4\%$

Kamran Ali, T. Anwar, I. H. Naqvi & M. H. Jafry. "Composite Event Detection and Identification for WSNs using General Hebbian Algorithm". In *IEEE International Conference on Communications (ICC)*, London, United Kingdom, June 2015.

Kamran Ali, I. H. Naqvi. "EveTrack: An Event Localization and Tracking Scheme for WSNs in Dynamic Environments". In *IEEE Wireless Communications and Networking Conference (WCNC)*, Doha, Qatar, April 2016.

Kamran Ali, S. B. Ali, I. H. Naqvi, & M. A. Lodhi. "Distributed Event Identification for WSNs in Non-Stationary Environments". In *IEEE Global Communications Conference (GLOBECOM)*, San Diego, USA, December 2015.

N. Shahid, S.B.Ali, Kamran Ali, M. A. Lodhi, O. B. Usman, I. H. Naqvi. "Joint Event Detection & Identification: A Clustering based approach for Wireless Sensor Networks". In *IEEE Wireless Communications and Networking Conference (WCNC)*, Shanghai, China, April 2013.

JOURNAL
PUBLICATIONS

Kamran Ali and Alex X. Liu. “Fine-grained Vibration Based Sensing Using a Smartphone”. In *IEEE Transactions on Mobile Computing (TMC)*. *Impact factor: 5.11* [Under-Revision]

Kamran Ali, Alex X. Liu, Mohammed Alloulah, and Fahim Kawsar. “On Goodness of WiFi based Monitoring of Vital Signs in the Wild”. In *IEEE Transactions on Mobile Computing (TMC)*. *Impact factor: 5.11* [Under-Revision]

Kamran Ali, Alex X. Liu, Eugene Chai, and Karthik Sundaresan. “Monitoring Browsing Behavior of Customers in Retail Stores via RFID Imaging”. In *IEEE Transactions on Mobile Computing (TMC)*. *Impact factor: 5.11* [Under-Revision]

Kamran Ali, Alex X. Liu, Wei Wang, and Muhammad Shahzad. “Recognizing Keystrokes Using WiFi Devices”. In *IEEE JSAC Human-In-The-Loop Mobile Networks*, February 2017. *Impact factor at the time of acceptance: 3.672*

Umar Ibrahim Minhas, Ijaz Haider Naqvi, Saad Qaisar, Kamran Ali, Saleem Shahid, Muhammad Awais Aslam. “A WSN for Monitoring and Event Reporting in Underground Mine Environments”. In *IEEE Systems Journal*, December 2016. *Impact factor at the time of acceptance: 3.88*

PATENTS

Long-Term Sleep Quality Monitoring Using WiFi Signals. Filed, Feb 12, 2019, Nokia Bell Labs

Allocating Subcarriers in Powerline Networks. Filed, March 31, 2016, Hewlett Packard Enterprise

Classifying Interference in Powerline Devices. Filed, March 31, 2016, Hewlett Packard Enterprise

ACHIEVEMENTS

HONORS &
AWARDS

- ACM ICNP 2018 Travel Grant \$2000 (Sep 2018)
- MSU Engineering Research Symposium 2016-2017, Nominee for Best Poster Award, Honorable Mention
- Hewlett Packard Research Grant \$15,000 (Sep-Dec 2015)
- ACM MOBICOM 2015 Travel Grant \$1250 (Sep 2015)
- Project “SAHSE” (Safety Assurance in High Stress Environments) won 3 ICT R&D Awards (2014)
- National Outreach Scholarship (LUMS)
-Fully funded undergraduate studies including accommodation and monthly stipend 2009-2013
- Deans Honour List (LUMS) 2012, 2013
- Punjab Education Endowment Fund (PEEF) Scholar, 2009-2013
- Secured All Pakistan Rank of 4th out of over 50000 students in Engineering CAT (ECAT) exam 2009

WORK

EXPERIENCE

R&D Scientist - Wireless Communications & Edge Computing	March 2020 to Present
Electrical and Controls Systems Group, General Motors, Warren, MI, USA Research Focus: Autonomous and Connected Transport Systems	
PhD Research Scholar - Graduate Research/Teaching Assistant	Aug 2014 to Feb 2020
Systems and Security Lab, Computer Science and Engineering, MSU	
Research Associate - Intern	June 2019 to Aug 2019
Pervasive & Ubiquitous Systems Group, Nokia Bell Labs, Cambridge, UK	
Research Associate - Intern	June 2018 to Aug 2018
Pervasive & Ubiquitous Systems Group, Nokia Bell Labs, Cambridge, UK	
Research Associate - Intern	May 2017 to Aug 2017
Applied Sciences Group, Microsoft Research, Redmond, Washington, USA	
Research Associate - Intern	May 2016 to Aug 2016
Mobile Communications & Networking Group, NEC Labs, Princeton, USA	
Research Associate - Intern	May 2015 to Aug 2015
Networking and Mobility Lab, Hewlett Packard Labs, Palo Alto, USA	
Senior Research Assistant	Nov 2013 to Aug 2014
ADCOM Lab, Department of Electrical Engineering, LUMS Project: Safety Assurance in High Stress Environments (SAHSE) with WSNs	
Research Associate	June 2013 to Aug 2014
ADCOM Lab, Department of Electrical Engineering, LUMS Project: Design & Implementation of a Low Cost COTS Wireless Sensor Nodes	
Undergraduate Research Assistant	Jan 2013 to May 2013
ADCOM Lab, Department of Electrical Engineering, LUMS Project: Outlier and Event Detection and Identification in Wireless Sensor Networks	

LUMS (Electrical Engineering & Computer Sciences)

Digital Signal Processing, C++, Physics & EE Circuit Labs

MSU (Computer Science & Engineering)

Object-Oriented Software Development, Operating Systems, Computer Networks

- Oversaw weekly Lab Sessions, Designed and Graded Labs, Assignments and Quizzes, Tutorial sessions

** More information about me and detail about my projects before joining MSU can be found on my website
<http://smkrabi.weebly.com/>

RELEVANT SKILLS & EXPERIENCE

- **Programming**
 - C/C++, JAVA, Python, MATLAB, VHDL
- **Application Development**
 - Embedded Linux (QTCreator, arm-linux-gcc), Windows (C++, JAVA), Android (JAVA), iOS (Obj-C)
- **Software**
 - Linux, MATLAB, Simulink, Xilinx 14.1, Proteus, Co-Create (3D Modeling), LTSpice, NI MultiSim, AVR Studio, Code Composer Studio, IAR Embedded Workbench, Latex
- **Hardware**
 - Micro-Controllers and Embedded Development Boards: USRP N210, XILINX FPGA's, Mini 6410, ALIX.2D3, TI mmWave Radar (IWR6843ISK), GSM Module, MSP 430, CC430, DSP (TMS320C6711); Peripherals Interfaces: CAN bus, Ethernet, I2S, I2C, USB, SIM, UART, GPIOs

EXTRA- CURRICULAR AND COMMUNITY SERVICE INFORMATION

- Co-Founder of *Teach My Nation* project: Our goal is to make *quality* school education affordable to underprivileged kids in Pakistan, provide them with necessary material, track their progress, etc.
- Treasurer in Council of Graduate Students (COGS), Michigan State University, 2017-2018
- Executive Board Representative of International Students Association (ISA) in Council of Graduate Students (COGS), Michigan State University, 2016-2017
- President in Pakistani Students Association, Michigan State University, 2014-2016
- Director Public Relations in Pakistani Students Association, Michigan State University, 2016-2017
- Volunteered in events LUMUN, SCI-FI Science Olympiad and LUMS Olympiads
- Been an active member of SPADES (Science & Engineering Society at LUMS), LSMS (LUMS Mathematics Society) and IEEE LUMS Student Chapter, 2009-2013
- Member of Pakistan Education Endowment Fund and Punjab Youth Development, 2009-2013

HOBBIES

- Sports (Soccer, Squash, Table Tennis, Badminton)
- Singing, Sketching, Photography, Computer Gaming

REFERENCES

Dr. Fan Bai

- Staff Researcher, Electrical & Controls Systems Group, General Motors
- Email: fan.bai@gm.com

Dr. Alex Liu

- Professor, Department of Computer Science and Engineering, Michigan State University
- Email: alexliu@cse.msu.edu, xiangyangalex.lxy@antfin.com

Dr. Fahim Kawsar

- Team Lead/Manager, Pervasive Systems Group, Nokia Bell Labs, Cambridge, UK
- Email: fahim.kawsar@nokia-bell-labs.com

Dr. Mohammed Alloulah

- Member of Technical Staff, Pervasive Systems Group, Nokia Bell Labs, Cambridge, UK
- Email: mohammed.alloulah@nokia-bell-labs.com

Dr. Kazuhito Koishida

- Principal Lead Scientist, Applied Science Group, Microsoft, Redmond (WA)
- Email: kazukoi@microsoft.com

Dr. Ioannis Pefkianakis

- Senior Research Scientist, Networking and Mobility Group, Hewlett Packard Labs, Palo Alto (CA)
- Email: ioannis.pefkianakis@hpe.com

Dr. Eugene Chai

- Researcher, Mobile Communications & Networking Group, NEC Labs, Princeton (NJ)
- Email: eugene@nec-labs.com

Dr. Ijaz Haider Naqvi

- Assistant Professor, Electrical Engineering Department, LUMS School of Science & Engineering
- Email: ijaznaqvi@lums.edu.pk