


PERSONAL INFORMATION Senior R&D Scientist — General Motors
US Permanent Resident
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Email: kamran.luminite@gmail.com
 Google Scholar: 1900+ citations
<https://smkrali.github.io/>

PERSONAL STATEMENT A hands-on cross-functional technical leader, inventor, and problem solver; trained in research. I enjoy building real, working end-to-end systems & applications that involve multi-disciplinary skills, including both hardware and software, and like to collaborate with experts from other domains for interdisciplinary work. Both through my academic and industry work, I have gathered extensive experience in algorithms and techniques for advanced sensing and connectivity, and related end-to-end HW/SW system implementation. I am an expert system architect who can effectively design and build highly complex systems that may involve a variety of skills including hardware design, fast prototyping, firmware programming, algorithms, machine learning, and proof-of-concept demos. My publications have been cited 1900+ times and my contributions have resulted in 50+ patents. I am a strong team player, quick learner, easily adapt to new things, and can get the job done.

INTERESTS & EXPERTISE Connected Sensing Systems, Sensor Fusion, Signal Processing, Algorithms, Machine Learning, Data Science, Localization & Mapping Systems (SLAM), Sensor Calibration, Wireless, IoTs, Computer Networks, Mobile/Edge & Cloud Computing, HW/SW System Integration & Performance Modeling

WORK EXPERIENCE **Senior R&D Scientist** **March 2020 to Present**
Vehicle Systems Research Lab, General Motors Global R&D, Warren, MI, USA

Contributions Focus: Connected ADAS/Autonomy and Vehicle Experience

- Vehicular communications and RF sensing (in-cabin/external), Cloud & Edge Computing
- Multidimensional sensor data fusion and signal processing, SLAM, Sensor Auto-Calibration
- ML/AI techniques for vehicle perception, crowd-sensing, federated training, and cooperative-awareness
- Proposed and delivered 6 advanced technology works to engineering (managed \$1.2M+ in funding)
- Mentored 10+ interns, contractors, and junior engineers with successful project outcomes

PhD Research Scholar - Graduate Research/Teaching Assistant **Aug 2014 to Feb 2020**
Systems and Security Lab, Computer Science and Engineering, MSU

PhD Research Associate

Pervasive & Ubiquitous Systems Group, Nokia Bell Labs, Cambridge, UK	June 2019 to Aug 2019
Pervasive & Ubiquitous Systems Group, Nokia Bell Labs, Cambridge, UK	June 2018 to Aug 2018
Applied Sciences Group, Microsoft Research, Redmond, Washington, USA	May 2017 to Aug 2017
Mobile Communications & Networking Group, NEC Labs, Princeton, USA	May 2016 to Aug 2016
Networking and Mobility Lab, Hewlett Packard Labs, Palo Alto, USA	May 2015 to Aug 2015

Senior Research Assistant **January 2013 to Aug 2014**
ADCOM Lab, Department of Electrical Engineering, LUMS

- Safety Assurance in High Stress Environments (SAHSE) with Wireless Sensor Networks (WSNs)
- Design and Implementation of a Low Cost COTS Wireless Sensor Nodes

** More details about my projects before joining MSU can be found on my website <http://smkrali.weebly.com/>

EDUCATION **Michigan State University**, East Lansing, Michigan, USA

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*

LUMS, School of Science & Engineering, Lahore, Pakistan

B.S. Major: Electrical Engineering, Minor: Computer Sciences **June 2013**

- Senior Thesis: Outlier/Event Detection, Identification and Localization for Wireless Sensor Networks in Harsh Environments with Hardware Implementation on EZ430-2500 TI Motes

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

RELEVANT
HW/SW
SKILLS &
EXPERIENCE

- **Hardware**
 - Micro-Controllers and Embedded Development. Boards: XILINX FPGA's, Mini 6410, GSM Module, MSP/CC-430, ESP-32, DSP (e.g., TMS320C6711), GPU platforms like Jetson Nano/AGX-Orin, USRPs.
 - Data Acquisition and Interfacing: I2S, I2C, USB, SIM, UART, GPIOs, CAN, etc.
 - Multilayer PCB Design (Altium Designer), Antenna Design (HFSS), RF components
 - Sensors: GPS, IMU, Lidars, Radars, Cameras/Vision, Audio, Humidity, Temperature, etc.
 - Lab instruments: Spectrum Analyzers, Oscilloscope, Logic Analyzers, Multimeters, and Power Analyzers
- **Software**
 - Latex, Linux, MATLAB, Simulink, HFSS, Altium Designer, Xilinx Vivado, LTSpice, 3D CAD/Printing
- **Application Development**
 - Embedded Linux (C/C++), Windows (C++, JAVA), Android (JAVA), iOS (Objective-C)
- **Programming**
 - C/C++, JAVA, Python, MATLAB, VHDL

EXTRA-
CURRICULAR
AND
COMMUNITY
SERVICE
INFORMATION

- Co-Founder of *Teach My Nation*: Our goal is to make *quality* school education affordable to underprivileged kids in Pakistan, provide them with necessary material, track their progress, and career counseling.
- Served as Technical Program Committee (TPC) member in IFIP Networking 2019
- Reviewer: IEEE Vehicular Networking Conference, IEEE Transaction on Mobile Computing, IEEE Transactions on Vehicular Technology, IEEE Sensors Journal, IEEE Transactions on Wireless Communications, ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), IEEE Mobile Ad-Hoc Networks and Smart Systems (MASS), IEEE Transactions on Dependable and Secure Computing, IEEE Communications Magazine, IEEE Transactions on Sensor Networks
- 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

HOBBIES

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