Manish M. Kochhal

<http://www.linkedin.com/in/kochhalm>

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| San Jose, CA [kochhalm@gmail.com](mailto:kochhalm@gmail.com) | (978) 376-3918 (C) |

##### PROFESSIONAL SUMMARY

Seasoned professional with over 12 years of extensive experience with various aspects of software development and business lifecycles. Specializations include:

* Software development on parallel, embedded, and resource constrained real-time platforms,
* Designing end-to-end cross-functional features for large-scale distributed systems,
* Kernel Programming, Device Drivers, Firmware Development – RTOS and Baremetal,
* Wireless communication technologies, IoT, and
* Strong debugging and testing skills.

##### PROFESSIONAL EXPERIENCE

***Staff Software Engineer, ePowertrain and Autonomous Drive Platform*** September 2016 – present

**NIO Inc, CA, USA**

*Responsibilities*:

* Developed an Event Data Recorder (EDR) that serves as a black box to record anomalous behavior of an autonomous drive system.
* Developed real-time and robust communication framework that enables critical deterministic inter and intra-ECU messaging across heterogeneous platforms and interfaces.
* Developed an automated validation framework for camera calibration by emulating simultaneous image and message replays to the autonomous domain (AD) controller.
* Led the development of the 2-wire BroadR-Reach Automotive Ethernet with NxP TJA1100 PHY and Marvell 88Q5050 switch. First in the company to deliver a full stack UDP/IP communication for Electrified Powertrain (ePT) Network.
* Architected, designed, and implemented a generic Inverter State Machine (ISM) to support inverter application behavior when interacting under normal, standby, fault, and limp states.
* Lead engineer responsible for requirements, design, development, and successful delivery of a generic application platform for DCDC 800/400 within a short turnaround time of 4 weeks.
* Evangelist for tools development and automation within the ePT team. With an intern developed a $25 sniffer tool for CAN and two-wire Ethernet using COTS.

***Lead/Principal IoT Firmware Engineer***  July 2015 – August 2016

**SunCulture Solar, CA, USA**

*Responsibilities*:

* Employee #13. Grew the software team to include experts in Bare Metal, iOS, Cloud, IoT, wireless protocol and embedded platforms. Led the development of an IoT-based energy aware platform for SunCulture’s groundbreaking portable solar energy product.
* Architected, designed, and implemented a generic and abstracted full stack middleware to work across the broad spectrum of SunCulture products that require IoT-like features.

***Software Engineer - Consultant****,*  Mar 2015 – June 2015

**Cisco, CA, USA**

*Responsibilities*:

* Developed SW for the next generation Cisco/Meraki Wireless LAN Controllers.

***Staff Engineer - Software Development****,*  Feb 2014 – Feb 2015

**Qualcomm, San Jose, CA, USA**

*Responsibilities*:

* Developed an adaptive and dynamic power backoff scheme that works along with other schemes such as TDM and FDM (frequency avoidance) to improve the performance of WLAN-BT-LTE coexistence in a multi-mode mobile handset product.
* Automated the testing and profiling of KPI performance metrics using Perl, Python, R&S CMW Forum, Android ADB tools, Gnuplot, and LaTeX.
* Supported OEM customers during carrier deployments.

***Scientist, Sr. Staff - Software Development****,* Sept 2010 – Dec 2013

**Broadcom Corporation, Sunnyvale, CA, USA**

*Responsibilities*:

* Developed a generic In-Device Coexistence (IDC) framework that supports efficient collaboration among interfering LTE, WiFi, Bluetooth, and GNSS radios in a mobile handset with optimal throughput performance.
* Developed an IPv4-to-IPv6 transition feature (DSLite) for the European operators.
* Developed the Universal Services Gateway for USB devices attached to the cable modem.
* Developed Picture Quality framework for BCM35230 DTV platform.

***Sr. Software Engineer,* Software/CDMA EV-DO Call Processing Group** Jan 2007 – Aug 2010

**Airvana Inc., Chelmsford, MA, USA**

*Responsibilities*: Software design, development, and debugging of call-processing software for 1xEV-DO/CDMA2000 wireless systems. Enhance the existing software to support novel QoS optimizations for Voice-Over-IP (VoIP). Analyzed Key Performance Indicators (KPIs) to study the feature performance both at the AT and the AN side during handoffs, bad RF conditions, capacity constraints, and high session rates

***C/C++ Programmer (Bio Informatics),* JSL Labs Jan 2006 – Dec 2006**

**Dept. of Chemistry/DNA Software Inc., Wayne State University**

*Responsibilities*: Worked on the following features and enhancements to the Visual OMP product from DNA software (www.dnasoftware.com).

***Adjunct Faculty* Jan 99 – Dec 05**

Department of Computer Science, Wayne State University, USA and University of Mumbai, India

Courses: Introduction to C and UNIX, Electronics Lab, Digital Logic, Introduction to Microcomputers, and Electronic Systems Design

***Graduate Research Assistant*  Jan 01 – Aug 05**

Networking Wireless Sensors (NeWS) Lab, Wayne State University, USA

##### RELEVANT Skills

* Network Protocols: TCP/IP, IPv4/v6, Web Socket, MQTT, DHCP, MobileIP, DS-lite, VoIP
* Wireless Protocols: LTE, WLAN, Bluetooth, NFC, 3G 1xEV-DO, MANETs, and WSNs,
* SoC Platforms: ARM (Cortex M3/M4), STM32F405, Infineon Tricore, NxP (S32v/S32k)
* Embedded OS: VxWorks, LINUX, TinyOS, FreeRTOS, ThreadX, and Baremetal,
* IoT: Broadcom WICED SDK, BCM 43362/43341/4343W, Marvell’s 88W8777 and 88MC200,
* Hardware Interfaces: SPI, I2C, CAN, BroadR-Reach 2-wire Ethernet,
* Programming Languages: C, C++, Python, Java, NesC (Networked Embedded Systems C), and
* ISO26262 certified.

##### EDUCATION

*Ph.D. in Electrical and Computer Engineering*, May 2010

Wayne State University, Detroit, Michigan

Dissertation Topic: "Unified Role Assignment Framework for Wireless Sensor Networks''

*M.S. in Electrical and Computer Engineering*, December 2002

Wayne State University, Detroit, Michigan

M.S. Thesis: “An Efficient Core Migration Protocol for Providing QoS in Wireless Mobile Ad hoc Networks (MANETs)”

*B.E. in Electronics Engineering*, June 1998

University of Bombay, Bombay, India

# ACCOMPLISHMENTS

* 2013 1200+ citations Google Scholar Research Page
* 2012 Researcher Judged Outstanding Researcher by USCIS
* 2004 SenSys NSF Student Travel Grant for a premier conference
* 2004 University Dissertation Fellowship, Wayne State University, MI, USA
* 1999 Community Scholarship, higher studies abroad, Sahu Jain Trust, India
* 1998 top 5/120 Ranked top five among college undergrads in Electronics
* 1995-98 Regional Scholarship, undergrad. studies, Sir Ratan Tata Trust, India

# REFERENCES

Available upon request