SIDDHARTH SHETTY

C/H: +1 310 592 8554 Email: Siddharth.Shetty@colorado.edu Website: http://www.siddharthshetty.me/
Linkedin: http://in.linkedin.com/in/siddharthshetty

Highlights

- **Communications systems engineer with diverse technical skills.**
- **Led and drove Wireless Standards and specifications development.**
- **Published author on several studies involving different wireless technologies such as Ultrawideband (UWB), WiMAX, 802.11b/g, Bluetooth.**

Experience

Microchip, Irvine, CA
Principal Systems Engineer May'11 – Present

- Design, validation and test of 802.11a/b/g/n baseband modem
- Integration of Baseband, MAC and RF IPs for a low-cost, low-power consumption SoC solution
- Develop an exhaustive sample-accurate MATLAB-based system model for the purpose of system-level performance benchmarking and evaluation. Model includes emulation of analog aspects such as RF impairments (thermal noise, phase noise, non-linearity) and AGC
- Hardware debug of end-to-end system involving RF front end, analog and digital baseband blocks.
- Work closely with Analog / RF / firmware teams to verify DAC / ADC / AGC performance, antenna switching, transmit power control, I/Q amplitude and phase mismatch / LOFT / PLL calibration etc.
- Support firmware team with RF/digital baseband hardware settings, sequencing and porting of MATLAB-based hardware calibration code to firmware
- Support IC and system validation teams to debug hardware / firmware issues, optimize processes (e.g. calibration time reduction) in the production chain
- Develop MATLAB-based automated measurement lab-bench for PHY / RF performance benchmarking - PHY PER, Receiver front end chain gain / loss characterization, transmit power / EVM characterization.

Tata Teleservices Limited - Indian Institute of Technology Center of Excellence in Telecom (TICET)
Indian Institute of Technology Bombay (IITB), India
Project Manager Apr'10 – May'11

- Design and implementation of proprietary wireless (OFDM-based) long-haul video surveillance network.

Staccato Communications, San Diego, CA
Communication Systems Engineer May '05 – Jan '09

- **System level test and development**
  - Responsible for evaluating standardization and specification related design requirements for CommSys and RF groups.
  - Detect and Avoid (DAA): Led development and standardization efforts related to DAA technology within Staccato. Responsible for evaluating implementation feasibility of this technology in a low cost WiMedia UWB based solution.
  - System level performance testing in both conducted and radiated test set up. Blocking performance, co-channel and adjacent channel interference testing, range testing in both indoor and outdoor environments.
  - Worked on radio performance test and optimization at both PHY and MAC layers. Assessing impact of in-band and out-of-band blockers on channel acquisition / packet error rate and their effect on MAC procedures.
- **Emissions compliance**
  - Responsible for procuring regional UWB regulatory grants for multiple reference designs. Tasks included test automation in MATLAB environment for pre-screening, design and construction of internal radiated test set bed to emulate country-specific methodologies for UWB emissions compliance testing.

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WiMedia Alliance Group May '05 – Nov '08

Member, Contributor

- Major contributor to WiMedia PHY/MAC specifications.
- Active participant in WiMedia's multivendor PHY interoperability events.
- Member of co-channel and adjacent channel interference study group to evaluate performance of multiple WiMedia peer-to-peer connections sharing the same geographical location.
- Several technical contributions on interference assessment from UWB devices to licensed services in different regulatory domains (USA, Europe, China).

Bluetooth Special Interest Group Nov '06 – Nov '08

Member, contributor – Core spec, Coexistence and Regulatory groups

- Member and contributor: Bluetooth / WiMAX Coexistence group: Independently led coexistence study for radios on non-collocated platforms. Theoretical and practical analysis of interference assessment between WiMAX and various short range technologies (802.11, Bluetooth and UWB) http://www.youtube.com/watch?v=PGOiDXWymNk.
- Contributed to Alternate MAC / PHY (AMP) spec: Evaluation of technical issues associated with 802.11 and UWB as candidate AMPs. Member of the study group evaluating very short range performance of 802.11 radios. Completed a comprehensive analysis of co-channel throughput analysis for 802.11 nodes in realistic environments using open source Linux drivers.

Articles and Publications

- Speaker: Ultra Wide-Band Systems, Technologies and Applications, IET, London, Apr '06. http://tv.theiet.org/technology/communications/996.cfm
- Siddharth Shetty, Roberto Aiello, "802.11-Bluetooth and WiMAX – A question of safety distance", Electronik Praxis, Feb' 09. http://www.elektronikpraxis.vogel.de/hf/articles/172492/
- S. Shetty, R. Aiello, "Detect and Avoid (DAA) Techniques - Enabler for Worldwide Ultrawideband Regulations", The Institution of Engineering and Technology Seminar on Ultra Wide-Band Systems, Technologies and Applications, Apr '06. http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=4123621
- Roberto Aiello, Siddharth Shetty "High Speed Bluetooth testing raises concern". Electronic Engineering Times, March '08. http://www.wirelessnetdesignline.com/howto/206903929

Patents (Author / Co author)

- "Approach for Enabling Coexistence for Radio Technologies", USPTO Patent **# 8725078; Grant Date : 05-13-2014**
- "Exchange of detection and avoidance information", USPTO Application No. 11/726737 Filing Date: 03-21-2007; Filed by Staccato Communications Inc.
- "DAA concept with uplink detection: frequency domain quiet periods", USPTO Application No. 12/080257 Filing Date: 03-31-2008; Filed by Staccato Communications Inc.

Education

***Master of Science (M.S.-Thesis),* Department of Interdisciplinary Telecommunications**
GPA 3.8 **University of Colorado, Boulder, CO**
Coursework: Wireless data networks, Network Systems (Comp Science), Data Communications, Telecom Multimedia, IP Routing, Advanced Wireless Systems and Software Defined Radios. Thesis title - '*Detect and Avoid (DAA) mechanism for coexistence of commercial WiMedia Ultrawideband products with WiMax service*'

- **Research Assistant**
  - Feasibility of low-power radio operation in the TV 'whitespace' band. http://ieeexplore.ieee.org/Xplore/login.jsp?url=/iel5/10350/32916/01542613.pdf?arnumber=1542613