

# SIDDHARTH SHETTY

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## Highlights

- **Published author on several studies involving different wireless technologies such as Ultrawideband (UWB), WiMAX, 802.11b/g, Bluetooth.**
- **Led and drove Wireless Standards and specifications development.**
- **Worldwide UWB regulatory expert – Chair of worldwide regulatory group, a technical group within WiMedia Alliance comprising of 300+ member companies.**

## Experience

### **California Institute for Telecommunications and Information Technology (CalIT2), UCSD, San Diego, CA**

*Research Engineer*

Jan '09 – Present

- Systems design for MIMO implementation on the Wireless Open-Access Research Platform (WARP) with 802.11 front end

### **Staccato Communications, San Diego, CA**

*Communication Systems Engineer*

May '05 – Jan '09

#### ➤ **Standardization and development**

- Responsible for evaluating standardization and specification related design requirements for core communication systems 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. Evaluated in MATLAB simulation environment, different signal detection algorithms based on reuse of the existing OFDM transceiver Fast Fourier Transform (FFT) block
- Co-inventor of the DAA concept of propagating detection information using MAC 'Information Elements' to neighbor nodes in order to achieve detection diversity.
- Worked on radio performance test and optimization at both PHY and MAC layers e.g. signal acquisition in presence of adjacent and co-channel (frequency band) interference and its impact on the MAC beaconing protocol.
- System level capacity evaluation for WiMedia systems based on channelization supported by WiMedia standard. Developed a detailed theoretical model for system capacity over operational range based on individual channel performance parameters such as receive sensitivity range and channel reuse.
- Participated in multivendor PHY and MAC level interoperability tests events for radios based on the WiMedia specification. Actively involved in analyzing and solving interoperability issues between different vendor radios using various RF and baseband troubleshooting measures.

#### ➤ **Emissions compliance**

- Responsible for procuring FCC (US) and TELEC (Japan) 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 FCC's methodology for UWB emissions compliance testing. Good understanding of RF concepts on both radio front end side and antenna propagation effects.

### **WiMedia Alliance Group**

May '05 – Nov '08

*Member, Contributor*

#### ➤ **WiMedia common radio platform specification**

- Chair and leading member of the DAA Tiger team responsible for standardization and specification of DAA within WiMedia.
- Chair of Worldwide Regulatory technical group.
- Major contributor to WiMedia PHY/MAC specifications.

#### ➤ **World wide UWB Regulations**

- Several contributions on interference assessment from UWB devices to licensed services in different regulatory domains (USA, Europe, China).

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- Major contributor in development of UWB regulatory harmonized standard specification (ETSI EN 302 065) and DAA rules and regulations in Europe (ETSI TS 102 754).

## **Bluetooth Special Interest Group**

Nov '06 – Nov '08

*Member, contributor – Core spec, Coexistence and Regulatory groups*

### ➤ **Coexistence study group**

- Contributor: Bluetooth WiMAX coexistence whitepaper.
- Independently led the evaluation of coexistence between Bluetooth (current and next gen) and licensed radios operating on non-collocated platforms. Contributions included theoretical analysis followed up with experimental measurements obtained from a test set up consisting of actual WiMAX base and subscriber stations and a vector signal generator to generate Bluetooth and 802.11 interference signals.

### ➤ **Core Spec group**

- Involved in 802.11 performances evaluation in short range operation scenarios. Used a combination of conducted and radiated throughput tests with multiple Linux-driven 802.11g nodes to observe the role of transmit power control in short range operation.

## **BPL Mobile Communications Ltd**

*Assistant Manager, Network and Switching / Intelligent Network*

Jul '01 – Dec '02

### Articles and Publications

- Speaker: Ultra Wide-Band Systems, Technologies and Applications, 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", Elektronik 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](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 (Co author)

- "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.

### Software and tools

MATLAB, PlaNET / EDX / SEAMCAT (Wireless planning tool for 2G and 3G cellular systems), Airmagnet / Kismet (WiFi sniffing and analysis tools), Madwifi drivers (open source Linux drivers for 802.11 radios), Netperf / Iperf (throughput analysis tools), Agilent signal studio and VSA

### Standards and protocols

GSM, GPRS, CDMA, WCDMA, WiMAX, 802.11, Bluetooth, WiMedia UWB, TCP, UDP, RTP, SIP

### Education

**Master of Science (M.S.-Thesis)**, Department of Interdisciplinary Telecommunications  
GPA 3.8 University of Colorado, Boulder, CO  
Coursework: Wireless LANs, Network Systems (Comp Science), Data Communications, Telecom Multimedia, IP Routing, Advanced Wireless Systems and Software Defined Radios.

### ➤ **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>

**Recommendations:** Provided upon request.