

PANKIL M BUTALA

pankil.butala@gmail.com

www.pankilbutala.com

(213) 399-3988

EDUCATION

Boston University, Boston, MA **May 2015**

Doctor of Philosophy, Electrical and Computer Engineering **GPA: 3.96**

- Ph.D. Thesis: Optical MIMO communication systems under illumination constraints. Advisor: Prof. Thomas Little.
- Developed low complexity spectrally efficient MIMO OFDM signaling schemes.
- Investigated optical MIMO wireless signaling techniques.

University of California, Los Angeles, CA **June 2007**

Master of Science, Biomedical Engineering **GPA: 3.61**

- Designed multi-tap FIR/IIR digital filters.
- Developed java based GUI to parse DICOM images.
- Subjects studied include advanced digital signal processing, statistics and analog circuit design.

University of Mumbai, Mumbai, India **May 2006**

Bachelor of Engineering, Biomedical Engineering **GPA: 3.92**

- Senior project: Travelling photometer. Developed prototype for analytical laboratory instrument in R&D phase at Transasia Bio-Medicals Ltd., Mumbai.
- Subjects studied include microprocessors, computer programming, advanced digital signal and image processing, control systems, analog and digital electronic circuits.

SKILLS

- Wireless: OFDM, PHY Modulation, MIMO.
- Standards: IEEE 802.15.7 (WPAN-TG7), IEEE 802.11.x (WLAN, WiFi), LTE, CDMA, GSM.
- Programming: ANSI C, embedded C, C++, assembly, C#, Java, SQL, objective-C, Verilog.
- Web: HTML, CSS, HTTP.
- Networking: TCP/IP, UDP, Sockets, ANT+, Bluetooth.
- Signal Processing: FFT/IFFT, Wavelets, FIR, IIR, Sampling, Interpolation, Kalman filter, EKF.
- IDEs: Visual Studio, MATLAB, Code Composer Studio, Eclipse Xilinx ISE, Xcode.
- Version Control: GitHub, SVN.
- Microcontrollers: TI TMS320x DSP, TI MSP430x MSP, Infineon C166x μ C.

WORK EXPERIENCE

Qualcomm, Inc., San Diego, CA **June 2015 – Present**

Senior RF Embedded Software Engineer

- Innovate, design and implement embedded drivers for cutting edge RF and modem hardware technologies.
- Participate in product development lifecycle from inception and design to bring-up, optimization, verification and commercialization.
- Awarded 'Qualstar Diamond' for outstanding contribution to Qualcomm's successes.

Multimedia Communication Laboratory and Smart Lighting Engineering Research Center,
Boston University, Boston, MA **September 2011 – Present**

Research Assistant

- Designing Xilinx FPGA based optical wireless 4x4 MIMO system with an imaging receiver and implementing OFDM variant as modulation at PHY.
- Generating optical MIMO system specifications to develop prototypes in collaboration with partners.
- Developed a wireless, networked color sensor platform (CuSP) to deploy in smart spaces.

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- Designed an iOS app and wireless, networked inertial sensors (FAM) for monitoring, detection and real time classification of functional activity.

Boston University, Boston, MA

Summer 2011

Teaching Assistant, Electric Circuit Theory, EK307

- Responsible for conducting office hours, creating and grading homework.

Advanced Analytical Technologies, Inc., Ames, IA

March 2009 – July 2010

Software Engineer

- Developed GUI data analysis and controller software in C# for analytical laboratory instruments.
- Implemented real time control, digital signal processing, pattern search and match algorithms.

Enova Systems, Inc. / Hyundai Enova ITC, Torrance, CA

August 2007 – March 2009

Software Engineer

- Developed embedded code in C/C++ for hybrid vehicle motor drive control modules.
- Developed an in house UI tool to obtain real time system diagnostic data.

Lilavati Hospital and Research Center, Mumbai, India

June 2005 – December 2005

Engineering Intern

- Serviced and maintained imaging, analytical and diagnostic machines.

PATENT APPLICATION

- Sensory lighting system and method for characterizing an illumination space. 2013
Inventors: R. Karlicek, R. Radke, T. Little, *P. Butala*, and L. Jia
Publication date: 2013/4/19
Patent office: US
Application number: 14/394,888

LIST OF PUBLICATIONS

- Performance of color shift keying under non-linear system model and illumination constraints. 2015
P. Butala, H. Elgala, and T. Little, *OWC, IEEE Globecom*, San Diego, CA.
- Trace-orthogonal PPM – Space time block coding under rate constraints for visible light communication. 2015
M. Biagi, A.M. Vegni, S. Pergoloni, *P. Butala*, and T. Little, *Journal of Lightwave Technology*.
- Multi-wavelength visible light communication system design. 2014
P. Butala, H. Elgala, P. Z.-Ha, and T. Little, *OWC, IEEE Globecom*, Austin, TX.
- Sample indexed spatial orthogonal frequency division multiplexing. 2014
P. Butala, H. Elgala, and T. Little, *Chinese Optics Letters*.
- Performance of optical spatial modulation and spatial multiplexing with imaging receiver. 2014
P. Butala, H. Elgala, and T. Little, *IEEE Wireless Communications and Networking, PHY and Fundamentals*, Istanbul, Turkey.
- SVD-VLC: A novel capacity maximizing VLC MIMO system architecture under illumination constraints. 2013
P. Butala, H. Elgala, and T. Little, *OWC, IEEE Globecom*, Atlanta, GA.
- Metameric modulation for diffuse visible light communications with constant ambient lighting. 2012
P. Butala, J. Chau, and T. Little, *IEEE IWOW*, Pisa, Italy.
- Monitoring walking and cycling of middle-aged to older community dwellers using wireless wearable accelerometers. 2012

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Y. Zhang, K. Beenakker, P. Butala, C. Lin, T. Little, A. Maier, M. Stijntjes, R. Vartanian and R. Wagenaar, *IEEE EMBC*, San Diego, CA.

- Wireless system for monitoring and real time classification of functional activity. 2012
P. Butala, Y. Zhang, T. Little and R. Wagenaar, *COMSNETS*, Bangalore, India.

CONFERENCE ORAL PRESENTATIONS

- Performance of color shift keying under non-linear system model and illumination constraints. 2015
OWC, IEEE Globecom, San Diego, CA.
- Multi-wavelength visible light communication system design. 2014
OWC, IEEE Globecom, Austin, TX.
- Performance of optical spatial modulation and spatial multiplexing with imaging receiver. 2014
IEEE Wireless Communications and Networking, PHY and Fundamentals, Istanbul, Turkey.
- SVD-VLC: A novel capacity maximizing VLC MIMO system architecture under illumination constraints. 2013
OWC, IEEE Globecom, Atlanta, GA.
- Metameric modulation for diffuse visible light communications with constant ambient lighting. 2012
IEEE IWOW, Pisa, Italy.
- Wireless system for monitoring and real time classification of functional activity. 2012
COMSNETS, Bangalore, India.

POSTER PRESENTATIONS

- Impact of color space non-linearity on performance of color shift keying. 2015
NSF Site Review, Smart lighting ERC, Troy, NY.
- Designing a dual purpose indoor illumination and optical communication system. 2015
Industry Academia Day, Smart lighting ERC, Troy, NY.
- Designing a dual purpose indoor illumination and optical communication system. 2014
New England Networking and Systems Day, Boston, MA.
- Performance of Optical Spatial Modulation and Spatial Multiplexing with Imaging Receiver. 2014
NSF Site Review, Smart lighting ERC, Troy, NY.
- SVD-VLC: MIMO VLC architecture under illumination constraints. 2014
Industry Academia Day, Smart lighting ERC, Troy, NY.
- Indoor Diffuse Optical MIMO Communication System. 2013
NSF Site Review, Smart lighting ERC, Troy, NY.
- Metameric Modulation for Diffuse Visible Light Communications with Constant Ambient Lighting. 2013
Industry Academia Day, Smart lighting ERC, Troy, NY.

AWARDS AND LEADERSHIP

- President Student leadership council, Smart lighting ERC. Since 2014
- Chair Engineering students' workshop, Boston University. 2014
- Representative Smart lighting ERC at national level inter-ERC perfect pitch competition. 2014
- Won Perfect pitch competition, Smart lighting industry-academia event. 2014
- Vice President Student leadership council, Smart lighting ERC. 2013-2014
- Captain Soccer team, Student association of graduate engineers, BU. 2012-2013
- University Chair Student leadership council, Smart lighting ERC. 2012-2013
- Secretary Student association of graduate engineers, BU. 2012-2013
- Representative For ECE students, Student association of graduate engineers, BU. 2011-2012
- Dean's fellowship Awarded at BU. 2010-2011
- Student Member IEEE. Since 2010

REVIEWS AND TPC

- Technical Program Committee (TPC) member for Workshop on Visible Light Communications and Networking *IEEE, International Conference on Communications*, London, UK 2015
- Technical Program Committee (TPC) member for Optical Wireless Communications *IEEE, International Conference on Communications*, Kuala Lumpur, Malaysia 2016
- Reviewer for multiple articles in following reputed journals:-
 - OSA Optics Express
 - OSA Optics Letters
 - OSA Journal of Lightwave Technology
 - IET Optoelectronics
 - Elsevier Information Sciences
 - IEEE Photonics Technology Letters
- Reviewer for multiple conference publications at :-
 - IEEE Globecom
 - IEEE International Conference on Communications