

muhammad haris usmani

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PERMANENT 162-D • Phase 5 • D. H. A., Lahore • Pakistan

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EDUCATION

Carnegie Mellon University, Pittsburgh, PA • Anticipated 2015
Masters of Science in Music and Technology
QPA: 3.84

Lahore University of Management Sciences, Lahore, Pakistan • June 2013
Bachelor of Science
• Major: Electrical Engineering • Minor: Computer Science
Specialization GPA: 3.74 CGPA: 3.68

RELEVANT COURSES

Electroacoustics **Advanced Digital Signal Processing**
Computer Music Systems **Machine Learning for Signal Processing**
Hybrid Instrument Building **Interactive Art & Computational Design**

EXPERIENCE

Bose Corporation, Framingham, MA • Summer 2014
• Digital Signal Processing Intern – Automotive Systems Division
Developed a MATLAB toolbox to conduct psychoacoustically motivated inter-aural analysis of near-field transducers. Used MATLAB's OOP and designed a programmatic GUI for the tool. Took in-vehicle binaural acoustic measurements, familiarized with system-level tuning and performed subjective listening tests along with objective analysis.

Carnegie Mellon University, Pittsburgh, PA • 2013-2014
• Teaching Assistant – School of Computer Science
Instructed 25 Students on the **Principles of Computing**. Conducted weekly recitation sessions along with weekly office hours.

Five Rivers Technologies, Lahore, Pakistan • Summer 2013
• Project Consultant/Engineer at TechJango
Designed and developed Open-source Arduino based Electronic Drums.

Nescafé Pakistan, Lahore, Pakistan • Summer 2012
• Artist at Nescafé Basement
Experienced 'collaborative music-making' under our mentor Zulfi J. Khan. Arranged, performed and recorded 6 musical pieces with 14 other musicians.

Lahore University of Management Sciences, Lahore, Pakistan • March 2012
• Research Assistantship – Advisor: Dr. Zartash A. Uzmi
Developed and tested a Wireless Sensor Node design based on the IRIS/MicaZ architecture. Focused on providing a convenient programming interface. Successfully implemented tinyOS support on the design. Designed and used surface-mount (SMT) PCBs.

HONORS

• Dean's Honor List • 2010-2013
• Represented LUMS at P&G University Challenge, Battle of Bands • 2011
• **5 straight A's** in GCE A Levels and **9 straight A's** in GCE O Levels • 2004-2009
• Student Council, Documentary Club President, LGS • 2008-2009
• Best Band, Rafi-Peer International Youth Performing Festival • 2008

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SKILLS

Programming: • C/C++ • VHDL • Python • MATLAB/Simulink • MAX/MSP
Software: • Graphic Designing (Photoshop) • Web Designing/Development (Fireworks, Joomla) • Video Production (Premiere) • Music Production (Ableton Live, Pro Tools) • CAD (Autodesk Inventor) • PCB Designing (Proteus, EAGLE)
Languages: • English (Native or Bilingual) • Urdu (Native or Bilingual)

SELECTED PROJECTS

WSN in Mines: a System Level Implementation • 2013

• Final Year Project – Advisor: Dr. Ijaz Haider Naqvi
Designed and implemented a distributed Wireless Sensor Network for event monitoring in a mining environment; focused on the routing-protocol (Network Layer); aimed to extend WSN lifetime, avoid centralized point-of-failure and counter the loss-of-sensors nodes in a particular locality.

FPGA based Electronic Drums • Fall 2012

• Digital System Design – Course Project
Developed a highly cost-effective FPGA based MIDI Electronic Drum-kit with extremely low latency and a natural playing response. Joined Five Rivers Technologies to launch this kit as an open-source product.

NRSfM using Local Rigidity • 2013

• Computer Vision – Research Project – *Published in IEEE WACV 2014*
Non-rigid structure from motion (NRSfM) requires exploiting local rigidity between points (rigidity in space) and between adjacent frames (rigidity in time); focused to detect rigid points (or bone-lengths) without any prior knowledge of the data-set being input, making the solution more general.

Continuum Fingerboard-The Touch Synthesizer • Spring 2012

• Data Acquisition & Interfacing – Course Project
Designed and implemented a prototype of a musical instrument, the Continuum (originally by *Haken*); used an IR-array of 14-by-5 transmitters and receivers built using crude IR diodes; designed an algorithm to eliminate environment IR noise and variation across IR diodes; used Direct Digital Synthesis to produce musical notes.

Noise Cancellation Headphones • Fall 2011

• Devices & Electronics – Course Project
Designed and implemented low-cost active noise-cancellation headphones; preferred the use of discrete components such as BJT Amplifiers and RF Filters; successfully cancelled low to mid frequency environmental noise, thus increased clarity of sound.

ACTIVITIES

Deewane a Capella, Carnegie Mellon University • 2013-14

• Tenor 1 • Soloist

Music Society, Lahore University of Management Sciences • 2010-11

• Director IT & Media

LUMS Olympiad, Lahore University of Management Sciences

• Director IT • 2011

• Event Co-Head for Music Video • 2010

• REFERENCES, DOCUMENTS: AVAILABLE UPON REQUEST •