ABDULLAH HASAN

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OBJECTIVE

To become a researcher in my field and adapt to evolving technologies.

RESEARCH INTERESTS

- FPGA's
- Computer languages
- Embedded Systems
- Digital signal processing
- Wireless Communication
- Digital Communication

EXPERIENCE

Lab Engineer, ISRA University, Islamabad **October 17, 2016 – To Date**

Responsible for Robotics and Automation lab and also taught introduction to computing lab to 1st semester, robotics & automation lab to 8th semester, Object oriented programming lab to 3rd semester, VLSI lab to 7th semester and Instrumentation & Measurement lab to 4th semester and co-supervised two final year projects.

Internship, PAK ELEKTRON LIMITED (PEL) **July – September, 2014**

Worked in the EHV-Power Transformer department, understood the winding types, cooling types, losses and insolation structures of power transformers. Understood the coil-core assembly, the vapor phase drying (VPD), and different transformer tests.

PUBLICATION

Paper Published titled ***"PAPR Reduction of FBMC-OQAM using A-law and Mu-law Companding"*** in Conference ELEKTRO 2018 Mikulov, Czech Republic, MAY 21-23, 2018.

https://ieeexplore.ieee.org/document/8398246/

Paper titled ***"Analysis of Timing Synchronization Techniques in OFDM for SDR waveform: Performance Comparison"*** accepted for publication in The 21st International Symposium on Wireless Personal Multimedia Communications, Chiang Rai, Thailand, November 25-28, 2018

EDUCATION

NUST College of Electrical & Mechanical Engineering (CEME), Islamabad.

Master of Science in Electrical Engineering **Batch:** 2015-2018 **CGPA:** 3.25

Studies focused in FPGA's, signal processing, digital communication and computer networks. My thesis was focused on to reduce one of demerits of multicarrier waveforms PAPR, on one of the contender waveform of 5G Filter Bank Multicarrier (FBMC).

Federal Urdu University of Arts, Science and Technology, Islamabad.

Bachelor of Science in Electrical Engineering **Batch:** 2011-2015 **CGPA:** 3.23

Specialized in communication and electronics. Actively participated in team projects to create real-world applications.

Punjab College for boys, Lahore. **FSc. Pre-Engineering** **Year:** 2009-2011

Marks Percentage: 60.54%

Studies focused in engineering subjects such as Mathematics, Algebra, Physics and Chemistry. Learned basic concepts and applied these concepts to practical issues.

Ivars High School, Lahore. **Matric** **Year:** 2009

Marks Percentage: 72.36%

Studies focused in Mathematics, Physics, Chemistry and Biology.

PAPR Reduction in Filter Bank Multicarrier using Companding Techniques (MS Thesis)

ABSTRACT

Filter Bank Multicarrier (FBMC) is a contender waveform for 5G communications. It is spectrally efficient resulting in high data rates. The prototype filters are well localized which does not affect bandwidth efficiency and out of band ripples are nearly removed. Offset-QAM along with filter banks eliminates the need of cyclic prefix as in OFDM. FBMC like OFDM suffer from high PAPR requiring high power amplifiers with high dynamic range to be used at the transmitter thus increasing the cost and power. There are several reduction techniques which reduce PAPR but at the expense of BER degradation. Clipping and filtering is the simplest of all reduction techniques but it involves signal distortion which results in data loss. Partial transmit sequence (PTS) and Selected Mapping (SLM) techniques are widely used for PAPR reduction. But both of these algorithms are complex and are less efficient as side information is required to be transmitted so that information can be retrieved at the receiver. Tone injection and tone reservation are less complex techniques but BER degradation is more as there is some data loss. Pre-coding techniques are simple to implement but are computationally complex and have some data rate loss. In this thesis different companding techniques have been investigated for PAPR reduction in FBMC. A-law and Mu-law companding has shown good reduction in PAPR but BER degradation is very high. Exponential companding has the most BER degradation among all companding techniques discussed in this thesis but has good PAPR reduction. Nonlinear companding has the lowest PAPR reduction but has almost the same BER degradation as in Piece-wise companding. Simulation results have shown that piecewise companding gives best results compared to all companding techniques. Also there is significant reduction in PAPR and very less BER degradation in AWGN, Rayleigh and Rician channels. Piecewise companding techniques is also computationally less complex compared to all reduction companding techniques.

FINAL YEAR PROJECT - ANDROID CONTROLLED ROBOTIC SOLAR CAR

In this project a communication system through android and internet was developed to control a solar car. The android app facilitates the user the live video streaming and location of the car. The car was also loaded with a facility to be used as mobile source of electricity (Electricity Generator). Car was also made intelligent enough to avoid obstacles.

SEMESTER PROJECTS

Family Tree program in Introduction to Programming Course.

Car Registration program in Object Oriented Programming and Data Structures Course.

FM Receiver in Electrical Network Analysis.

Traffic Control System in Digital Logic Design Course.

Class B Amplifiers in Electronics II Course.

Wall Tracking Robot in Embedded System Design Course.

EXTRA-CURRICULAR ACTIVITIES

- Worked as **PRESIDENT** of Society of Innovative Electronics FUUAST (SIEF).
- Organized 3-day Inter-University Mega Event **INNOVATIA'15** as President of SIEF from 7th to 9th June 2015.
- Organized workshop on **PLC & PCB** designing as President of SIEF from 19th to 20th June 2014.
- Got **First Position** in **SCAVENGINEER** in **NASCON 14** held at **FAST**, Islamabad from 18th to 20th April, 2014.
- Got **First Position** in **COMPLETE IMPLEMENT & COMPETE** in **GIKI INNOVATION SUMMIT 14** held at **Ghulam Ishaq Khan Institute of Science & Technology**, Swabi from 30th November to 2nd December, 2014.
- Got **Third Position** in **ESSAY WRITING** and **MATHEMATICAL HUNT** in **IST YOUTH CARNIVAL 15** held at **Institute of Space Technology**, Islamabad.