MUHAMMAD OBAIDULLAH

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Talented and experienced ASIC/FPGA and Full-Stack Software Engineer with over 6 years of hardware and software development experience in broad range of industries including 3D entertainment, product management, course management, and Internet of Things (IoT). Has in depth knowledge of FPGA hardware, heterogenous processing platforms (GPUs, CPUs & FPGAs), OpenCL kernel development, and on-chip communication networks (NoCs). In addition to this, possesses solid understanding of software algorithms, hardware IP development, and hardware design verification. My objective is to utilize professional skills and life experiences to securing a professional career as a Hardware Engineer. To tackle challenges and advance, while continuously developing, implementing, and adopting new technologies to maximize development efficiency and produce innovative products.

EXPERIENCE

ASIC DESIGN ENGINEER
Qualcomm Canada Inc.
July 2017 – Present

Working on Snapdragon SoCs (ASIC chip design flow) and designing Video Processing Engines and algorithms.

TEACHING ASSISTANT
Ryerson University
Sep 2015 – Aug 2017

Teaching and assisting for course COE838 - Systems on Chip Design, COE718 - Embedded Systems Design, & COE608 – Computer Architecture and Design at Ryerson University Electrical & Computer Engineering Department. Duties included conducting labs, managing student records, marking lab-reports, evaluating project demos, and assisting professor in teaching.

RESEARCH ASSISTANT
Ryerson University
May 2015 – Aug 2015

Involved in an intensive research in surveying Network-on-Chip communication architectures and developing CAD tools for optimal throughput and other critical network parameters. Developed different algorithms including Hybrid Discrete Particle Swarm Optimization (HDPSO) which optimize network parameters based on core graph and design rules.

FIRMWARE DESIGNER
NeuronicWorks Inc.
March 2015 – Aug 2015

Developing firmware and software code for Texas instruments micro-controller chips, Bluetooth LE enabled micro-controllers, and automation of different industry automation processes. Developed three complete windows C# application suites for controlling FESTO PLCs and Texas Instruments micro-controllers. Was also involved actively in system level design and automation of many projects.

TUTORING
Madina Academy
Nov 2015 – May 2015

Tutored 9 - 12 grade high school students in courses of Calculus & Vectors, Advanced Functions 11, and Advanced Function 12 at Madina Academy which is an Ontario ministry registered private school. Was involved in organization of syllabus, and marking exam and quiz papers.

C# APPLICATION DEVELOPER
IQRA Taleem-ul-Atfal (Regd.)
Dec 2014 – March 2015

Duties included, mySQL and SQLite database development and integration. Developing complete solution for managing admissions, tokens, student records, and teacher/staff records. Implemented licensing, secure login system, and barcode reader input. Developed using C# on Microsoft Visual Studio. UI/UX design of the application was done using Adobe Photoshop. Included backward compatibility with older software versions and other third-party applications and met project deadlines in a timely manner.

UAV CIRCUIT DESIGN
Abu Dhabi University
Jan 2013 – Aug 2014

Complete Unmanned Aerial Vehicle circuit board design, manufacturing, soldering and testing. Gained experience in Eagle CAD, gyroscope hardware, PID controls, FTDI chips, XBee, different PCB test equipment and several micro-controllers.

PCB PATCH ANTENNA DESIGN
Abu Dhabi University
Jan 2014

PCB FR4 material patch antenna design and simulation using Ansoft Designer & Ansoft HFSS for 2.4 GHz Wi-Fi application.

ANDROID APPLICATION DEVELOPMENT
Abu Dhabi University
Sep 2013 – July 2014

Developed several advanced android applications for university projects. The applications were targeted towards control of embedded systems through UDP or TCP socket communication. Was also involved in developing Mobile Government application for document control and automatic form filling for UAE government interior ministry.
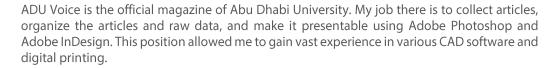
WEBSITE DEVELOPMENT
ADU Voice
Sep 2013

An elegant and professional website was designed, developed, and coded for the official magazine of Abu Dhabi University. The website allows the visitors to have a look at monthly issues and get more information about the team. The website was built using HTML, CSS, JavaScript, and Photoshop.

CHIEF DESIGNER
ADU Voice
Sep 2013

ADU Voice is the official magazine of Abu Dhabi University. My job there is to collect articles, organize the articles and raw data, and make it presentable using Adobe Photoshop and Adobe InDesign. This position allowed me to gain vast experience in various CAD software and digital printing.

PROJECTS

Ryerson University
Aug 2015

Mesh topology NoC Verification and Testing using SystemC
SystemC was used to simulate a 8 by 8 mesh on-chip network and different traffic parameters were analyzed based on various traffic injection patterns. This produced results which were used to create a model of on-chip throughput verses traffic load.

Ryerson University
Dec 2015

4K Ultra-HD Video Noise Reduction System on FPGA
Designed, and implemented a multi-modal application consisting of FIR filter and RGB-to-Grayscale Converter modes operating on 4K resolution 60 fps video. The solution is capable of either reducing noise or converting RGB to gray-scale according to the mode required.

Ryerson University
Jan 2016

Tabu-ed Discrete Particle Swarm Optimization for NoC Mapping
A novel technique of optimization combining Tabu-search and Discrete Particle Swarm Optimization for Network-on-Chip mapping problem was developed. A multi-platform GUI software written in C++ was built and can be used to generate optimum Network-on-Chip (NoC) for the input multi-modal application core graph. Given the application cores/IPs, the software can generate optimal positions in which the cores/IPs should be placed in the network to attain maximum throughput and minimum chip power and area consumption.

Ryerson University
Nov 2016

Porting Android to DE1 SoC (Altera Cyclone V FPGA)
Analyzed the Android ecosystem and adapted it to fit onto an FPGA-based SoC (Cyclone V). The end hardware-software system can control the FPGA hardware from the Android application. Porting Android stack to a HPS-FPGA system allows apps to take advantage of FPGA fabric and perform partial reconfiguration to build and tear-down application specific accelerators on the remaining FPGA fabric. This opens a whole new domain of downloadable and installable Virtual Hardware Components (VHCs) to mobile phones.

Ryerson University
Feb 2017

32-bit CPU Design on FPGA
A 32-bit CPU was designed, implemented, and tested on DE2 FPGA board using Altera Cyclone IV device. CPU can execute most MIPS instructions such as JMP, BNE, BZE, LD, ST etc.

EDUCATION

M.A.Sc. Degree
Ryerson University
Sep 2015 – Present

M.A.Sc. Electrical & Computer Engineering (In Progress)
Pursuing Master of Applied Science degree in Electrical & Computer Engineering having focus on On-chip interconnection networks and CAD tools under supervision of Dr. Gul N. Khan. I have developed a new and specially tailored optimization technique for NoC application mapping problem which is a hybrid of Tabu-Search and Particle Swarm Optimization methods. In addition to this, I am also researching on how to accelerate different optimization algorithms by use of Heterogeneous Processing Units running parallel code. GPUs in recent years have shown their vector processing capabilities and GPU vendors (Nvidia & AMD) provide APIs to use these parallel processing features.

Microsoft Certified Professional
Microsoft
June 2016

Microsoft Certified Professional
Completed the requirements to be recognized as a Microsoft Certified Professional.

Microsoft Certified Specialist
Microsoft
June 2016

Microsoft Specialist: Programming in C#
Successfully completed the requirements (Exam 70-483) to be recognized as a Microsoft Specialist: Programming in C#.

B.Sc. Degree
Abu Dhabi University
Sep 2011 – Sep 2014

B.Sc. Electrical Engineering (ABET Accredited)
Bachelor's Degree in Electrical Engineering having focus on Communication and minor in Computer Engineering from Abu Dhabi University. Gaining enormous amount of hand-on experience and knowledge in different modulation techniques, antenna design, communication circuits, digital signal processing, software signal processing, satellite communication, sky wave communication, and line of sight communication. Additionally, focus on computer architecture, object-oriented programming, embedded networks, and digital circuits is given in the courses for minor in computer engineering.

Training Certificate
Abu Dhabi University
July 2013

iOS Programming
Trained on basic application development for Apple iOS with focus on objects, classes, properties, JSON parsing, and XML parsing. Attention was given towards pulling data from cloud and parsing it into local objects for view (MVC).

Training Certificate
Microsoft
Jan 2013

Windows Phone Application Development
Completed a two day training program taught by Microsoft's Middle East Technical Evangelist. It was focused on Expression Blend and Visual Studio.

Training Certificate
Ansca Soft Training
Jan 2013

Windows Phone Application Development
Trained on advanced windows API's such as accelerometer and NFC when Ansca Soft (software development and teaching expert company based in Middle East) visited Khalifa University.

Training Certificate
Areef Computer Institute
August 2011

Web Design (HTML + CSS + Adobe DreamWeaver + Adobe Photoshop)
Got trained on developing advanced, yet user-friendly webpages. Leant to convert a webpage design from Psd to HTML and CSS.

High School Certificate
Islamia English School
June 2011

GCE A - Level
Graduated from Islamia English School, Abu Dhabi, with British General Certificate Education Advanced Level in Physics, Chemistry, and Mathematics with excellent grades.

Training Certificate
Areef Computer Institute
August 2010

Visual Basic .Net Programming

Completed Visual Basic .Net programming course from Areef Computer Institute where Windows forms, object event handling and object oriented programming techniques and advanced logical problem solving methods were taught.

Training Certificate
Syscoms Institute
August 2009

C++ Programming

Completed C++ programming course from Syscoms Institute of Technology where programming techniques and advanced logical problem solving methods were taught.

SKILLS

PROGRAMMING LANGUAGES

	Rating		Rating
VHDL	●●●●●	Python	●●●●●
OpenCL	●●●●○	LaTeX	●●●●●
System C	●●●○○	.Net	●●●●●
C++	●●●●●	XML	●●●●●
C#	●●●●●	HTML	●●●●●
C	●●●●○	CSS	●●●●●
Embedded C	●●●●○	JavaScript	●●●○○
Objective C	●●○○○	Matlab	●●●●●
Swift	●●●●○	C++ for After Effects	●○○○○
Java	●●●●●	php	●●●●○

Completely filled 5 circles (●●●●●) mean 4+ years of experience and excellent proficiency, while 1 circle filled (●○○○○) signifies limited proficiency and less than a year of experience.

TOOLS

	Rating		Rating
Altium Designer	●●○○○	Adobe After Effects	●●●●○
CadSoft Eagle	●●●●●	Adobe InDesign	●●●●●
PCB Wizard	●●●●○	Adobe Dreamweaver	●●●○○
Ansoft Designer	●●○○○	AgiSoft PhotoScan	●●●○○
Easy Power	●●○○○	XCode	●●●●○
Microsoft Office	●●●●●	Microsoft Visual Studio	●●●●●
MATLAB	●●●●●	Android Studio	●●●●●
NI Multisim	●●●●○	Eclipse	●●●●○
TeX Maker (LaTeX)	●●●●○	IntelliJ	●●●●○
Adobe Photoshop	●●●●●	GitHub	●●●○○

LANGUAGES

English   Able to speak, read, and write fluently

Urdu   Native language – Able to speak, read, and write fluently

Arabic   Able to read and write fluently

REFERENCES

References, reference details, and their contact information is available on request.