

# Rashid Z. Khan (US Citizen)

**Embedded SW, DSP & Firmware Engineer (interested in ONLY direct jobs with real companies NOT contract jobs) lives in Philadelphia (NOT Pittsburgh), PA, USA**

Philadelphia, PA - Email me on Indeed: [indeed.com/r/Rashid-Z-Khan-\(US-Citizen\)/a671a550ff62565b](https://www.indeed.com/r/Rashid-Z-Khan-(US-Citizen)/a671a550ff62565b)

Authorized to work in the US for any employer

## WORK EXPERIENCE

### **Firmware Engineer**

Alpha Technologies Inc. - Pittsburgh, PA - October 2014 to August 2015

#### Accomplishments

- Designed and tested digital and analog channel identification (full-band diagnostics) digital signal processing firmware modules written in C/C++ for a network node status monitoring transponder device known as Powered Gateway DOCSIS®.
- Re-coded and tested an existing non-volatile storage C/C++ firmware module according to modified firmware architecture for a legacy fiber optic status monitoring transponder device.

#### Skills Used

C/C++, Embedded Software, RTOS, Digital Signal Processing, Communications, Microprocessors/Microcontrollers

### **Firmware Engineer**

Cheetah Technologies L.P. - Pittsburgh, PA - September 2013 to October 2014

#### Accomplishments

- Re-coded and tested various existing C/C++ firmware control modules according to modified firmware architecture for two legacy fiber optics node status monitoring transponder devices.

#### Skills Used

C/C++, Embedded Software, Microprocessors/Microcontrollers, Electronics

### **Electrical and Electronic Systems Engineer**

CNH INDUSTRIAL - New Holland, PA - November 2011 to October 2012

#### Accomplishments:

- Provided continuing engineering C language based embedded software (microcontroller firmware) modifications design support for use in cotton harvester (picker) vehicle's control electronics. This included some exposure to Matlab/Simulink modeling of the vehicle's sub-system electromechanical control.

### **Firmware Engineer**

OCLARO, Incorporated - Horseheads, NY - April 2010 to February 2011

#### Accomplishments:

- Made modifications to the GUI (Graphical User Interface) C/C++ source code of an EDFA optical amplifier system modeling simulator for displaying amplifier's noise figure statistics.
- Designed GUI test tool scripts for system verification of an EDFA optical amplifier's control module using RS232 and I2C link protocols.
- Utilized and suitably modified a PC based C/C++ software utility for sanity testing of an optical amplifier's transmission control module using I2C protocol.
- Made C/C++ firmware (real-time embedded software) modifications for an optical amplifier's firmware upgrade releases.

### **DSP Engineer**

Teletronics Technology Corporation - Newtown, PA - June 2006 to April 2009

Accomplishments:

- Designed C language software modules for extraction of embedded high resolution (1280x1024) and standard resolution MPEG-2 video elementary bit streams from fiber channel payload frames.
- Designed preliminary real-time C software modules for Silicon Laboratories embedded 8051 micro controller-FPGA based flight recorder control panel product.
- Linked an ADPCM (adaptive differential pulse code modulation) audio decoder software C module to the MPEG-2 transport stream de-multiplexing chain (C software) of a real-time video decoder.
- Linked MPEG-4 (Part 2) video decoder software library set, with frame buffering, to an MPEG-2 transport stream de-multiplexing chain.
- Modified a third party MPEG-2 and MP3 standards compliant C language software package for real-time de-multiplexing of air-to-ground audio-video transport stream telemetry link data.

### **Senior Engineer**

InterDigital Communications Corporation - King of Prussia, PA - April 2004 to April 2004

Accomplishments:

- Designed preliminary interface C software control modules for the automatic gain control and automatic frequency control hardware blocks of a 3G (third generation) wireless modem platform.
- Designed a C software unit test bench for testing the operation of the automatic frequency control hardware block of a 3G wireless modem platform.
- Developed and simulated (using CoWare software and hardware modeling tool) a fixed-point timing manager algorithm for providing data flow timing control signals to the hardware blocks of a 3G wireless modem platform.
- Designed several C language based test scripts used by a software test bench for testing the physical layer hardware operation of a 3G modem platform.

### **Senior Engineer**

ITT Aerospace/Communications Division - Clifton, NJ - March 1998 to October 1999

Accomplishments:

- Designed selected microprocessor based real-time embedded assembly language software modules for a software-defined radio's firmware improvement project and participated in radio user control interface testing.

### **Digital Signal Processing Engineer**

Ariel Corporation - Cranbury, NJ - September 1997 to March 1998

Accomplishments:

- Converted selected microprocessor based real-time embedded assembly language software modules to equivalent C language software modules for ITU/CCITT v.34 modem product.
- Designed PC based C simulation software for a T1 network voice-band echo canceller.

### **Software Design Engineer**

Hewlett-Packard Company - Santa Rosa, CA - August 1996 to September 1997

Accomplishments:

- Fine-tuned existing C language embedded software modules as part of a HP PA-RISC microprocessor based next generation portable radio frequency (RF) measurement instrument's code division multiple access (CDMA) IS-95 standards compliant signal parameter's measurement firmware.

### **Member of Technical Staff Level - 1**

AT&T Bell Laboratories - Middletown, NJ - February 1988 to July 1996

Accomplishments:

- Designed and unit tested selected microprocessor based real-time embedded transmitter/receiver assembly language software modules for 2-wire switched telephone network QAM, QPSK, BPSK and FSK software modems.
- Modified and integrated microprocessor based real-time existing infrastructure embedded control software modules in both C and assembly languages for a T1 network switch voice quality improvement microprocessor circuit pack.
- Designed 4-wire analog leased line modem embedded microprocessor based real-time embedded assembly language software modules for non-disruptive circuit quality measurements.

### **Design Engineer**

Alcatel Transcom - Portsmouth, RI - November 1985 to December 1987

Accomplishments:

- Designed and unit tested microprocessor based real-time embedded assembly language software modules for automatic software provisioning (programmable gain and equalization settings) of telephone central office pulse code modulation channel units via intrusive telephone subscriber loop circuit quality measurement tests.
- Fine-tuned and maintained microprocessor based real-time embedded assembly language echo cancellation software modules for a metallic facilities terminal adaptive voice frequency repeater product.

## EDUCATION

### **Master of Science in Electrical Engineering**

University of Texas - Arlington, TX  
1983 to 1984

### **Bachelor of Science in Electrical Engineering**

University of Texas - Arlington, TX  
1979 to 1982

## PUBLICATIONS

### **Taylor Series Approximation of the Energy Spectral Density**

January 1, 1988

With L. Anderson and M. T. Manry, "Taylor Series Approximation of the Energy Spectral Density", IEEE transactions on Acoustics, Speech and Signal Processing, January 1988.

## ADDITIONAL INFORMATION

### TECHNICAL SKILLS & KNOWLEDGE AREAS

MS Visual Studio C; basic level experience in C++ language; assembly programming languages; real-time embedded DSP software design experience for modems; infrastructure software (C/C++) module re-usability; 16-bit microcontroller (8051); RS-232 serial data transmission utilizing UART; some familiarity with embedded RTOS concepts; software development life cycle familiarity; strong theoretical background in digital signal processing concepts and applications; modern selected digital waveform processing algorithm subject matter familiarity; TI [...] DSP processor familiarity; knowledge of I2C link protocol; familiarity with MPEG-2 video-audio transport stream processing; familiar with the use of NetBeans IDE under Ubuntu; familiar with SNMP v1 MIB design, incorporation and use within a MIB browser; some familiarity with embedded HTML; experienced in wiring basic Electronic and digital circuits on a breadboard using logic gates, resistors, capacitors, inductors and amplifiers; familiarity with UNIX