ANDREW MCROBERTS

Embedded/Firmware Systems Engineer

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EDUCATION

Bachelor's in Computer Science & Information Systems
UWRF
1999-2005, 2010-2012

Rocky Mountain College of Art & Design
RMCAD
2006

Ellsworth High School
Ellsworth
1997-2001

SKILLS

- Embedded Systems Engineering
- RTOS/GreenHills
- Software Engineering/Debugging
- Firmware Design
- IoT Security Design
- Driver Development

PROFILE

Hello,

My name is Andrew, and I am a senior embedded systems engineer with focus on protocol design and real time systems seeking opportunities in Hartford, CT, Minneapolis, MN, and abroad.

I have 8+ years of experience in object oriented software development, 5+ years in native firmware development, 2+ years of experience in machine learning with a focus on natural language processing and sentiment analysis, and 2+ years in sensor model and design.

WORK EXPERIENCE

SENIOR SOFTWARE ENGINEER
Zepto Life Technologies / St Paul, MN

2020-JAN 2023

- Designed and delivered a hardware feature release for feasibility testing.
- Directed a team producing analog signal analysis and detection system.
- Debugged various hardware level drivers in an embedded homebrew RTOS environment running on IMX8 and PIC33 hardware.
- Provided various API level features in both bare metal and SOM contexts.
- Designed solutions to various signal detection and Unit Tests for API Validation.
- Managed employee needs and developed improved team career skills.
- Designed validations and system level requirements for FDA evaluation via industry standard validations software (JAMA).
- Analyzed issues to determine the nature of and correct responsibility for addressing bugs and identifying risks.

ASSOCIATE SOFTWARE ENGINEER
Aerosim Technologies; L3Harris / Burnsville, MN

2013-2020

- Worked on team developing compatibility layer between VXWorks 653 and GreenHills RTOS, implementing ARINC 653 "APEX" API.
- Designed and implemented network and hardware drivers for Embedded PowerPC devices in support of re-hosted B787 software suite.
- Provided updates to improve systems simulations for various aircraft.
- Implemented various fixes and memory optimizations to Navigational Database cruncher systems.
- Implemented runtime instruction patching solutions for driving Power Architecture binaries on PowerPC processors.
- Designed and implemented baremetal IO System for p ysical simulated aircraft hardware through 3 generations of the development cycle.

ARMY COMBAT ENGINEER (E1-E4)
United States Government / US Army BCT 12/21b

2007-2010

- Awarded Army Commendation Medal for service in Iraq for OIF 08-10
- Performed in security office 1.5 years, truck gunner and communications operator 1.5 years
- Held active US Secret security clearance
- Deployed as part of a unit to provide technical RF support encompassing several technologies including GPS/GLONASS, Blue Forces Tracker interfacing and route entry, GIS mapping tools, and spreadsheet analysis
- Provided tactical input and support to team members while also liaising with senior staff.

SKILLS

Programming Languages: C, C++, C#, PPC Assembly, x86/x64 assembly, Java, Fortran.

IDEs: Visual Studio 2005-2021, Eclipse, MULTI, Matlab, Arduino, MPLab IDE

Scripting Languages: Python, Regex, Shell Scripting, XML, XSD, HTML, Javascript.

Operating Systems: Windows, Linux, Green Hills (RTOS), Android, FreeRTOS.

Other: Jira, Jama, Office Suite, Adobe Suite

AWARDS

July 31st - 2009

ARCOM

United States Army

Joint Base Balad Iraq

INTERESTS

- Philosophy
- Video Games
- Blacksmithing
- Machinestry
- Marksmanship
- Cycling

LANGUAGES

English

Español (Spanish)

中文 (Mandarin Chinese)

SPECIALTY AREAS

SOFTWARE DEBUGGING

Software Debugging in the Hardware and Software Realms

I specialize in isolating and clearing bugs pertaining to the behavior of software in various conditions, including hard ones like allocation timing errors, virtual function table corruptions, resource deadlocking and physical effects (such as RowHammer).

- Unafraid to read debugger messages; Knows what most of them actually mean at this point, and actively looks up the rest.
- Debugged undocumented avionics systems without source.

SYSTEMS ARCHITECTURE

Embedded and Core Systems Design

I have extensive experience in coding various processes and implementations on systems with limited resources or requiring parallel development, in both C and C++ development environments

- Applies forward-thinking to Allocation System, Scheduler, API, and Process Model design.
- Focuses heavily on effective code reuse and structure to prevent unnecessary rework.
- Unintimidated by digital signal processing and serial communications implementation and design.

CODE ANALYSIS

White-Box and Black-Box Testing/Auditing.

I enjoy both static and active analysis of code for bugs and quality control. I work hard to maintain functional integrity and design vision of I/O systems, isolating inefficiencies and streamlining solutions when necessary.

- Developed and refined optimized parsing code.
- Created scalable environments for legacy utilities.

Other Technologies

Some other technologies I have worked with include:

Arduino, Raspberry PI, IMX8, IMX6, DSP33, BeagleBone, UBoot, Device Tree management, Structured Text PLC Coding, Terminator IO Systems, MFC, WPF, COM objects, Interoperability wrappers, Xamarin Forms, JSON document design, and Google Protocol Buffers.

REFERENCES

Brian Champlin
Project Manager
L3Harris/ Aerosim

MikeWiekerak
Senior Colleague
L3Harris/ Aerosim

Chad Rheault
Director of Operations
Zepto Life Technologies, LLC

Contact Information Available Upon Request.