

Arthur (Art) Roberts

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SUMMARY

A Senior Software Engineer with a successful track record of developing applications targeting various platforms. Adept at moving software projects from design through deployment across multiple industries:

- ✓ **Cyber** - Hardware emulation, implant software, and reverse engineering for the intel community
- ✓ **Semiconductor** - Metrology systems software for processors/memory and fingerprint sensor drivers
- ✓ **Gaming** - Graphics card drivers for multi-GPU and various game features for AAA console sports titles

TECHNICAL SKILLS

Languages	C++, C, Python, C++/CLI, C#, VB.NET, Lua, x86/PPC assembly
Dev Environments	MS Visual Studio Pro 2003-2022, Visual Studio Code, JetBrains PyCharm, JetBrains CLion, Eclipse, WinDbg, GDB, FlashDevelop, SmartBear Code Collaborator
Frameworks	Platform SDK (Win32), MFC, COM, ATL, IDL, WDDM, QEMU, MAME, STL, .NET Framework, WinForms, WPF, OpenSSL, OpenGL, BOOST libraries
Database	MySQL, SQLite, MS SQL Server, MDAC, MS Access
Problem Tracking	Atlassian JIRA, GitLab, GitHub, TechExcel DevTrack, Mercury Test Director
Other	Agile, DevOps, CI/CD, Bamboo, Bitbucket, Jenkins, CruiseControl, Docker

EXPERIENCE

Nightwing Group (Previously Raytheon) - Palm Bay, FL

June 2016 to July 2025

Senior Software Engineer II

Responsibilities involve software development of hardware emulations using KI² (proprietary), QEMU, and MAME virtual machine software to support reverse engineering, vulnerability research, and implant development for Computer Network Operations (CNO). The KI² virtual machine software runs on both Windows and Linux, allowing for the emulation of a wide variety of hardware platforms and providing advanced kernel-level introspection capabilities.

Accomplishments:

- ✓ Reverse engineering of custom-designed hardware through analysis of binaries in Ghidra and IDA
- ✓ Development in C/C++ to extend emulation features for various embedded processors and devices
- ✓ Implant development for Computer Network Operations (CNO) such as intelligence gathering
- ✓ Python scripting for automated testing and fuzzing activities relating to vulnerability research
- ✓ US Citizen maintaining an active DOD Top Secret (TS) Security Clearance with SCI since July 2018

Advanced Micro Devices, Inc. - Orlando, FL

April 2013 to June 2016

Senior Software Development Engineer

Optimized and developed new features for the Direct3D drivers associated with CrossFire on AMD's complete line of Radeon desktop and mobile graphics processors. This included development of new features for the 10th generation of Windows and version 12 of DirectX. AMD CrossFire is a multi-GPU technology taking advantage of both integrated and discrete processors to improve graphics performance.

Accomplishments:

- ✓ Development in C++ for user-mode components within the new Windows Display Driver Model 2.0
- ✓ Collaborated with Microsoft to bring up the new Hybrid Graphics feature available in Windows 8.1

- ✓ Analysis of driver performance utilizing standard tools such as Xperf, GPUView, and Intel's vTune
- ✓ Improved performance of CPU intensive multi-GPU operations by 15% for Unreal Engine games
- ✓ Ongoing support of popular games and graphical applications through fixes for critical problems

Electronic Arts, Tiburon - Orlando, FL
Software Engineer / Contractor - Tech USA, Inc.

January 2011 to April 2013

Developed numerous software features associated with presentation graphics for the AAA game console title Madden NFL by EA Sports. This included development of 3D game features such as scripted character animations, screen wipes, and vignettes. Additionally, multiplayer gaming features were developed for the revival of NFL Blitz and both games render 3D graphics in full HD video at 60 frames per second.

Accomplishments:

- ✓ Development in C++ for Microsoft's embedded Windows DirectX gaming platform, the Xbox 360
- ✓ Utilized rendering subsystem and art asset pipelines to produce photo-realistic 3D animations
- ✓ User interface development in ActionScript 2 for graphical presentation in Flash 8 environment
- ✓ Windows tool development in C# giving Game Designers easy control over in-game animations
- ✓ Proficiency in EA's client/server C++ framework capable of scaling to support millions of users

AuthenTec, Inc. (now Apple) - Melbourne, FL
Senior Software Engineer

August 2007 to January 2011

Executed all aspects of the software development process for SDKs and drivers that provided fingerprint-based authentication to Windows Logon and to applications such as HP ProtectTools Suite, Wave Embassy Trust Suite, and the Lenovo ThinkVantage Client Security Solution. One of these SDKs has shipped on over 7.5 million laptops worldwide for Hewlett Packard, Dell, Lenovo, Toshiba, and many other manufacturers.

Accomplishments:

- ✓ Implemented a Public-Key Infrastructure for SDKs and drivers to prevent un-authorized clients
- ✓ Protected private information using secure sockets, digital signatures, CAT files, and obfuscation
- ✓ Supported website password replacement inside browser add-ons for IE, Firefox, and Chrome
- ✓ Optimized a multi-threaded C++ system service to minimize CPU usage and preserve battery life
- ✓ Designed and developed Win32-based GUIs with multi-language support for over 30 languages

KLA-Tencor Corporation - San Jose, CA
Software Engineer IV

May 2004 to August 2007

Designed and developed software for the design-based metrology and review of semiconductor devices such as the AMD x86-64 processor and Micron memory chips. Software automated the manual task of creating inspection routines by implementing pattern recognition and image processing algorithms.

Accomplishments:

- ✓ Development for large (1.5 million LOC) multi-tier distributed application in Windows 2000/XP
- ✓ .NET Framework 2.0 managed development in C++/C# to provide a chip design viewer application
- ✓ COM/DCOM client-server software development using ATL in Visual C++ and using Visual Basic
- ✓ Communication with 3rd party image rendering application using TCP/IP sockets networking

EDUCATION

Florida Institute of Technology - Melbourne, FL
BS - Computer Engineering