Kent D. Thompson - Principal / Lead / Senior Software Engineer *Cover Letter*

website: **kentthompson.org** email: **kent** @ **kentthompson.org** location: Tucson, Arizona 85710 voice: (520) 444-1069

I am a Principal / Lead / Senior Software Engineer living in Tucson, Arizona. I have a deep passion for engineering and love what I do. I am applying for the long-term, *full-time* **LEAD SOFTWARE DEVELOPER** position in Tucson, Arizona. My skill-set, **multi-language** work experience, knowledge and philosophy in regard to the job requirements are an *amazing match*. Have over 25+ years of real-world experience, yet I enjoy constantly learning new technologies, techniques and languages. Always.

Has, literally, not figuratively, long-time professional experience and special abilities in each and every one, not just a combination of a few, but ***each and every one of the requested areas and languages of expertise.***

Technical Lead and **Architect** of **The Raytheon Data Acquisition System** (DAS), a high-performance, sensor laden system, all developed in C++, using extensive imaging, data processing, measurement, metrology and visualization coupled with low-level graphics. See below for more information.

Additionally, a **billion dollars** of resources and activity at *Raytheon* were managed annually through software systems I lead, created, deployed and maintained using the full *Software Development Life Cycle* (SDLC).

- **Software Development Life Cycle** (SDLC): ***Decades (25+ years)*** *of deep, extensive experience.*
  - System Investigation: Study, gather and confirm requirements and behavior with stakeholders.
  - System Analysis: Create plans and workflows to accommodate communication and clarity.
  - Design and prepare hardware / server architecture and software tool-chain.
  - Iteratively write code, test, debug and demonstrate product with stakeholder input.
  - Documentation: Technical product documents as well as end-user documentation and help files.
  - Code Reviews: Developed methodology to calmly do reviews in a non-emotional manner.
  - Work closely and interactively with management and stakeholders in all aspects of process.
- **Expert level** with: **.NET, Java, C / C++, Delphi (Object Pascal, VCL), Visual Basic, HTML(5), CSS(3), JavaScript, Python, Linux - Linux Admin, C#, SQL** and **assembly language.** Software Design and Architecture, Object Oriented Design and Development. Design Patterns. **Databases. Linux** and Windows used extensively for over 30 years. Additionally Agile Development and Scrum Master experience. As well as Full-Stack, GUI "instrumentation." **Automation Technologies.** Node.js. Client / Server Architectures.
- **Medical Devices and Software:** Medical Hardware Devices. HIPAA - DICOM - PACS, FDA Processes and Documentation. Medical Ontologies.
- **Raytheon Data Acquisition System** (DAS): - *Raytheon Test Systems Design Center*. DAS interfaced with many types of sensors, missiles, communications equipment and cameras. Infrared, optical, et cetera. I wrote high-performance **C++** and **C#** code for OpenGL based visualization along with many analysis and operational algorithms. The DAS had to connect to, and communicate with literally every missile that Raytheon made. Each missile program had its own non-standard command, control and communication protocols; I became adept at quickly deciphering and implementing these diverse protocols. *Member of The Raytheon Architecture Team.*
- **Bare Metal - Embedded Systems - Embedded Firmware:** Extensive experience in Embedded Systems at all levels. From hardware selection to chip level programming to microcontrollers and Single Board Computers to developing toolchains all the way to production. Developed, wrote and maintained (full SDLC) all the embedded firmware, coded in C / C++ and assembly for a new line of **X-Ray generators for a medical device company**. The firmware controlled and monitored the x-ray components themselves. Also wrote a driver for a non-standard LCD display embedded in the machine itself. Also developed all the **communication software and protocols** to various equipment, personal computers and a specialized medical network (PACS). ADC / DAC / 80186 (and more) chip level code written. It was essentially a **machine control operating system.**
- **Refactoring:** Analyzing, debugging and improving large code bases without disrupting workflow or productivity.
- **Ability, Desire and Experience:** Humbly provide leadership and successfully solve real world problems and discern design patterns, objects, algorithms and solutions to real world situations from **The Problem Domain**. Not just forcing a "canned design / solution" onto an inappropriate situation. Please see my website Problem Domain Page for a much more in-depth explanation.
- **ISO 9000 / 9001 Training:** Six Sigma Certified. SEI CMMI Level 3 software certified.
- **Object-Oriented Design and Development:** Early adopter of *Design Patterns* and 'Componentized' Software. Deep understanding of Object Oriented Development processes, Agile and Scrum methodologies.

Kent D. Thompson - Architect / Principal / Senior Software Engineer Resume

website: **kentthompson.org** email: **kent** @ **kentthompson.org** location: Tucson, Arizona 85710 voice: (520) 444-1069

- A highly-motivated, energetic, tenacious, approachable professional with proven abilities in computer hardware and software engineering using integration, implementation, deployment, debugging, maintenance and troubleshooting.
- **Still has a deep passion and strong desire to achieve and be a great software engineer / developer.** Thrives on the daily challenges, people and accomplishments of this job. Loves to learn and help others learn and excel.
- Decades of engineering experience. Decades of Linux, Bare-Metal and Microsoft Windows experience. Eighteen years management experience. Sixteen years business ownership experience.
- Deeply understands the Software Development Lifecycle (SDLC) and all its facets and activities.
- Proven ability to successfully solve real world problems and discern successful **Design Patterns**, objects, and algorithms from real world situations and create successful solutions that can be applied to a broad range of software: engineering, communication, scientific, defense, business, graphic, educational, and Internet software. I enjoy learning and strive to always be a student of technology, then work hard to become an expert and help others do the same. I enjoy learning, the activities and challenges of being a software engineer. I live engineering and software as a lifestyle.
- **Expert level** with **C / C++, C#, JavaScript, Java, PHP, Python, Linux** and more. From building mainframe computers for radar simulation, machine control, high performance data acquisition systems to building ERP and financial applications written completely in C / C++, Java and C# to web-applications, I have experienced a wide range of situations in my career and excelled in each. **I will help your organization achieve its goals with these skills.**

Technical Expertise – **Expert level** in these items.

Languages: **C++,** Microsoft C#, Java, JavaScript, PHP, Python, **C** Language, HTML5 / XML, CSS3 / SASS, SQL, T-SQL, PS/SQL, Delphi (Pascal), VB.NET, Visual Basic, VBA, Assembly, Objective-C, Bash-Csh, Powershell. More.

Frameworks: **.NET**, Spring, Java Eclipse, Struts, MFC, MVC, Web Services (AWS, Linux), WCP, WPF, MVVM, ASP.NET, CodeIgniter, Laravel, Kendo, Lazlo, Dojo, Angular, Bootstrap, LAPP Stack, LAMP Stack.

APIs: Java API, .NET, WinAPI 32 / 64, ADO.NET, MS-Messages, AJAX / JSON, REST, SOAP, MS-COM, MS-DCOM, RPC, ActiveX, More.

Databases: SQL-Server, Oracle, PostgreSQL, MySQL, MS-Access, NoSQL, SSMS, PDO, ODBC, Many Utilities.

Libraries: .NET, JCL, C++ Standard, C Standard, jQuery, React, Kendo, Lazlo, Dojo, Angular, OpenGL, so many more.

Tools: Microsoft Visual Studio: all versions, Linux GCC / g++, Eclipse IDE - CDT – PDT, makefiles, CMake, multiple compilers, embedded systems and utilities, AVR Studio, Git, Team Foundation Server (TFS), SVN, many more.

Internet: Web Applications, Cloud Servers, Node.js, Web Services, Amazon, Linux Servers, Apache, Windows Servers, Internet Information Server (IIS), Internet Protocols, TCP/IP, UDP, ICMP, HTTP, CGI, Sockets, REST, SOAP, WSDL, AJAX / JSON, , FTP, SSH, RFQ, SIP, IP Cameras and IoT Devices, much more.

Platforms: Microsoft Windows - all versions, **Linux**: Debian / Ubuntu - Red Hat / CentOS, Others, Real-time embedded systems, RTLinix, Windows Embedded, custom operating systems. Bare-Metal.

Training: Six Sigma, **ISO 9000-/9001**, SEI CMMI Level 3, C++, Object-Oriented Architecture, Programming and Design, **Continuous Integration**, Unified Modeling Language (UML). **Automation Technologies**.

Hardware: Intel, ARM, Atmel, AMD, Microcontrollers (MCU), data acquisition, USB, SCSI, UART, SPI, I2C, CANbus, Serial, ADC, DAC, RS-232, RS-485, GPS, Arduino, Digital I/O, Fiber Channel, VXI, VME, NI-VISA, others. Backplane systems like VMEbus, VXIbus, Modbus.

Medical: Medical Hardware Devices. HIPAA - DICOM - PACS, FDA Processes and Documentation. Ontologies.

Methodologies: Design Patterns, Software Development Lifecycle (SDLC), Object Oriented Design and Development, Object Oriented Architecture, Refactoring, Agile, Scrum, **Automation Technologies**. Problem Domain Analysis, Distributed Methodologies, Large-Scale Networks, AOP, Visualization, 3D Modeling and Design, Project Management, Relational Database Design, 'Componentization', Enterprise Resource Planning (ERP), multithreading, concurrency, asynchronous and parallel processing, DRY, Separation of Concerns (SoC), SOLID, more.

Please see my website for further in-depth, expertise, capabilities and knowledge.

Kent Thompson Work History Highlights - Full history available upon request.

KENT THOMPSON CONSULTING *Principal* - Tucson Arizona *March 2015 to Present*

- Created large reference application for client with **Java8**, Spring Boot, Thymeleaf, HTML5, CSS3, Bootstrap, JPA and Oracle 12c.
- **Required Deep Understanding of the Internet and Linux.** Extended and maintained a low-level distributed telephony server-side process that controlled hundreds of calls a second for an "internet phone company." **C++** and the Dialogic PowerMedia HMP Library for Linux. **Linux Environment.** Myriad real-time asynchronous techniques employed as well as **diagnostic and logging extensions.**

MONUMENT SYSTEMS *Principal / Senior Software Engineer* - Tucson, Arizona *March 2014 to March 2015*

- **Java - C#.** Solved a 2 year backlog of critical tickets in a few short months. This is was enormous accomplishment. Solved many long-standing problems that had not been solved by any other engineer. **Extremely Large Java Codebase.** Hibernate, JDBC, large scale databases. Helped many people with hard problems. Moved a large web application along with advanced techniques. Mentored all the members of my team and many others in this company. Java, MVC, Design Patterns, Processes, Agile, Scrum.

OPUS INSPECTION GROUP *Senior Software Engineer* - Tucson, Arizona *February 2013 to March 2014*

- Developed large-scale vertical applications that managed test work-flow and recorded vehicular emission tests using **VB.NET, C#, JavaScript, jQuery, AJAX**, web-services, jQueryUI, (various other libraries) and SQL-Server 2012.
- Created application for the country of Sweden. It is a large web-based application where all resources are "in the cloud." The interface application runs on a cell-phone and is used as a data acquisition device. Using client-side technologies and libraries we are able to create responsive GUIs that promote high productivity and throughput for the users.

KENT THOMPSON CONSULTING *Principal - Tucson Arizona* *June 2009 to January 2013*

- Successfully created a .NET / COM Interop Interface library using C++ that is usable by any .NET language for a large complex x-ray generator library written in C++. Used COM and COM types to expose functionality that mapped native C++ classes and functions to .NET functions and types.
- Architected, developed and implemented **machine / robotic control code** for various Atmel micro-controllers, ARM processors, custom hardware boards, high precision cameras, infrared, optical and laser based range finders were developed. All in a Linux environment. Wrote and used **Assembly, C / C++** and libraries. Used CMake as a build system to maintain a single code base that ran on multiple chips and test and production systems. **Linux** was our base development system.
- Using the full Software Development Life-cycle (SDLC) developed a complete and extensive C#, Web-based, database driven system that maintains all maintenance, repair and customer involvement of the 17,000 street-lights for the City of Phoenix.
  Used C#, SQL-Server and Tablet Computers. Data is entered one-time only and is then propagated system-wide where needed. Technicians enter real-time data into tablet computers in the field. This data is then updated and propagated, real-time, into all facets of a system where it can be processed, viewed and acted upon. Much more omitted due to space.

FAXITRON / BIOPTICS *Research and Development Department* - Tucson, Arizona *September 2007 to May 2009*

- Performed R&D software development for medical and clinical research in the X-Ray and Mammography field. Created **high-performance** data-acquisition and post-processing software for X-Ray **sensors and cameras in C++.** Wrote firmware and machine control in C. Please ask for more information that cannot be added due to space considerations.
- FDA Documentation submitted and accepted the first time for medical x-ray device. Technical and end users manuals written.

RAYTHEON MISSILE SYSTEMS *Test Systems Design Center* - Tucson, Arizona

Software Architect, Team Lead, Senior Software Engineer II *December 2000 to February 2006*

- **Data Acquisition System** (Raytheon DAS) Involved in telemetry and video acquisition, low-level **OpenGL** graphics and video display. Designed, wrote and implemented several new heavily object-oriented extensible classes that embody the behavior of items listed above. Also wrote several utilities - DAS Version Switcher and DVS Installer - that saved a dramatic amount of time and unnecessary loading of software on EKV VDAS systems.
- **Software Architecture Team.** *(*Raytheon SAT) Provided C++ and object-oriented advice and assistance to other members of team. Helped with HTML advice for the on-line documentation. Introduced C# as a potential replacement for GUI's.
- **SM3 Seeker Software** Wrote C++ interface from SM3 Production Automation software to the Component Object Model (COM) interface of DAS (see above). Completed task successfully that others were unable to accomplish. Mentored other engineers in object-oriented methodologies, advanced C++ techniques and Windows API.
- **Test Equipment Manufacturing Requirement System**. (TEMRS) Employed the Full Software Life Cycle and **SOA** Architecture. Researched, developed requirements, developed architecture, designed classes, implemented design, deployed, maintained and supported a large software system called TEMRS. It is still in heavy use within TSDC. I also wrote many stand-alone maintenance utilities. "TEMRS Admin App." SAP data conversion utilities and customer support utilities.
- Our goal was to have "real-time" update and data access. And by all accounts – including Raytheon IT – we achieved it. Using a truly distributed SOA architecture, it far exceeds the performance of any 3-tiered systems I've ever worked with. Integrated Crystal Reports into TEMRS through **COM / DCOM** interfaces. Employed **MVC** (Model-View, Controller) to achieve data independence from implementation.
- **Standard Test Equipment Platform**. (STEP) Using LabWindows/CVI (C Language) wrote translation drivers for Raytheon STEP test systems. Specifically RF switch drivers for VXI Tech SMIPS, Pickering Dual 4x8 and 8x8 switch cards. Finished **ahead of schedule and under budget.** Other C work not listed due to space.

ADE PHASE-SHIFT *Senior Software Engineer - Tucson, Arizona* *November 1998 to December 2000*

- Provided C++ Object-Oriented mentoring, expertise, programming techniques and database interface design to programmer staff. Developed VERY high-speed graphical client/server application for state of the art **interferometery / optics** equipment. Worked in a scientific environment employing object-oriented design and writing object-oriented C++ classes. Mentored other programmers in OOP / OOD techniques. Wrote custom high-speed cutting-edge graphical routines using low-level Win32 functions. Wrote code that interfaced with PLC controllers and machine control. Worked with DSP and scientific algorithms. Used C, OLE, ADO, COM and DCOM in project.

Please contact me for any further information that may be required or helpful. Thank you for your time and consideration.