

REX KERR

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Professional Summary

With a passion for medical device software, I have over 25 years of experience delivering successful product releases, and extensive experience in leading and mentoring teams. Possessing a broad range of technical skills and expertise, from specifying and directing high level architectural design to a proven proficiency at low-level implementations; I am a dedicated team player who is committed to delivering high-quality pragmatic software solutions and I thrive in fast-paced environments.

I bring advanced expertise in programming languages such as C++ and Python, as well as extensive experience with DICOM, having been a voting member of the standards committee representing Prowess, Inc, as well as experience in a variety of other programming languages and technologies.

Experience

Apr 2018 - Present

Auris Health, Inc. (Johnson & Johnson)
Sr. Principal Software Engineer

As a consultant at Auris, I quickly demonstrated my value and was offered a full-time position where I took on increasingly impactful tasks. In my cross-functional role, I am responsible for overseeing the architectural design of user-facing applications, meeting with stakeholders and customers to better understand product specifications, and working with clinical and systems engineering to capture product requirements. I also developed key features, such as the PACS integration component, and mentored new developers in software design and programming language skills. Additionally, I manage and provide technical leadership to a team of developers responsible for designing and implementing cross-cutting architectural features.

Key achievements include:

- Re-architected monolithic single-procedure pre-operative planning and intra-operative navigation applications to allow plugin-based extension to support multiple modalities.
- Improved and maintain cybersecurity measures by reviewing penetration testing reports, writing MDS2 documentation, educating field-service on key management policies, and hiring and managing a full-time cybersecurity developer.
- Reduced customer complaints from the most significant source to nearly non-existent by re-implementing the pre-existing DICOM import feature, providing greater than order of magnitude performance improvements with far fewer failed imports.
- Designed and implemented PACS integration feature, working with systems engineering to gather voice-of-the-customer feedback, specifying requirements, specifying the design, and assisting with connectivity testing.

Aug 2015 -
Apr 2018

rk-logix, inc
Software Consultant/Contractor, President

As a software consultant I worked with a variety of clients across multiple domains, primarily focused on medical devices (Philips/Volcano, Think Surgical, Auris Health) as well as web development (Retail Radio, subcontracting for Ciere Consulting). I specialized in solving complex technical challenges using a variety of technologies, including cybersecurity implementations (PHI protection and user authentication, using libSodium and Botan), DICOM implementations (using MergeCOM and DCMTK), server-side Python REST APIs.

I had a proven track record of delivering high-quality solutions that met the needs of my clients. For example, I developed a hybrid web/desktop application in Python using PyQt that allowed re-use of server-side implementations, implemented multiple cybersecurity solutions for healthcare clients that protected patient records in compliance with FDA cybersecurity guidances, and multiple DICOM implementations to increase product interoperability.

My expertise in these technologies, combined with my ability to quickly learn new tools and frameworks, makes me a valuable asset to any project.

Oct 2005 -
Oct 2015

Volcano Corporation (*wholly owned subsidiary of Philips, Feb 2015*)
Principal Software Engineer

Performed a wide range of software engineering and architecture roles, including:

- Member of system architecture team; specification and development of next-generation architecture for multi-modality treatment planning system (see patents).
- Represented software team in intra-department communication of software architecture and design.
- Provided technical leadership for software development of latest generation IVUS (Intra-Vascular Ultrasound) imaging component.
- Cross-functional liaison between Software and Signal and Image Processing teams for specification of algorithm interfaces.
- Designed and implemented hardware abstraction layer for improved reusability and extensibility.
- Led software development of bedside touch-screen peripheral device. Worked with hardware team to test and troubleshoot device design.
- Maintenance and development on legacy products.
- Implemented DICOM export for IVUS imaging device.
- Provided DICOM support for escalated support/sustaining requests.
- Directed educational 'campfire' meetings to encourage a learning environment.
- Managed multiple direct reports and software contractors.

Oct 2002 - Sept 2005	Prowess, Inc Sr. Software Engineer, Engineering Manager
	<p>Recruited back to the company post-bankruptcy to re-establish the software development team and lead development of the company's Radiation Treatment Planning System.</p> <ul style="list-style-type: none"> • Directed the development team through three major product releases incorporating a revolutionary new approach to IMRT (Intensity Modulated Radiation Therapy), called Direct Aperture Optimization. • Collaborated with off-site medical physicists who designed the new algorithms to gather product requirements and user input. • Worked with off-site medical physicists to assist with pre-market testing, through first-in-human use. • Was active in all product specification, design, and development. • Special projects included development of custom memory management classes to enable scalability for very large data sets and performance tuning to improve persistence performance by as much as 500%. • Voting member of DICOM standards committee.
Jul 2002 - Oct 2002	Prodigm, Inc Consultant, Software Engineer
	<p>Worked with medical physicist, applying existing domain knowledge for development of the company's first product; gathering requirements, designing, and developing IMRT Quality Assurance application for radiation treatment planning.</p>
Apr 2002 - Oct 2002	Auctiva, Corp (http://www.auctionsniper.com)
	<p>Development of web application for automatically placing bids on eBay. Developed backend services for managing web page parsing, cookie/session management, credit-card billing, e-mail template management, <i>etc.</i></p>
Mar 1996 - Apr 2002	Alliant Medical Technologies (<i>formerly SSGI, Prowess Systems</i>) Software Engineer
	<ul style="list-style-type: none"> • Development of multiple modality treatment planning system for External Beam Radiation Treatment Planning, Brachytherapy, Cryotherapy, and Gamma Knife. • Wrote and maintained tool for describing treatment machine characteristics for use in treatment algorithms. • Wrote and maintained network interfaces between the company's Cancer Treatment Planning system and other medical devices using the DICOM protocol. • Represented company at DICOM standards meetings. • Managed software engineering interns. • Signing off features for release to QA department (Preliminary testing, verifying compliance with requirements document). • Handled customer support questions that needed engineering insight. • "Resident Expert", responsible for researching and understanding all of the department tools and applications to assist and train other engineers.

Conferences

Attended over a dozen software development conferences, including:

- Software Development West
- Astoria Seminar: Extraordinary C++
- Dr. Dobb's Architecture & Design World
- C++ and Beyond
- C++Now
- CPPCon
- Silicon Valley Code Camp
 - Slides: <https://www.siliconvalley-codecamp.com/Session/2015/exploring-c1114>

Patents

Nov 2020	US10847264B2	Resource Management in a Multi-Modality Medical System
Nov 2019	US20140180703	System and Method for Multi-Modality Workflow Management Using Hierarchical State Machines
Sept 2019	US20140188515	Multi-Modality Case Management System and Method
Mar 2015	US8977336	Distributed medical sensing system and method
Feb 2015	US8958863	Distributed medical sensing system and method
Aug 2014	US8797155	Distributed medical sensing system and method
July 2014	US201261746854	Devices, systems, and methods for handling data in the context of invasive, multi-modality medical systems

Education

Dec 1996	Bachelor of Science, Computer Science (Systems Option) California State University, Chico
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Skills

C++, boost, Python, C#, C, Qt, PyQt, .NET, Perl, SQL, DICOM, MS Visual C++, Clang++, g++, Bash, git, Subversion, Perforce, Linux, OSX, Windows, multi-threaded concurrent programming, HTML, Jira, Confluence, Enterprise Architect, CMake, DCMTK, MergeCOM, libSodium, libBotan