

# Richard F. Man

Software Engineering Director / Architect

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## Publications

College-level tutorial reference book: "C for Everyone: JumpStart Guide to the C Programming Language" (2016), various articles on C and multitasking kernels for Circuit Cellar and embedded-computing.com.

## Key Skills

- Communicating and collaborating with executive, go-to-market, and customer success teams to define product features, engineering solutions and requirements, and successful product releases.
- Software Architect: designing and implementing engineering solutions to the real-world requirements of complex software systems, leading teams to solve issues that crop up.
- C/C++ Guru: in-depth experience implementing production C/C++ compilers, optimizers, code generators, debuggers, C/C++ API specification.
- In-depth knowledge of algorithms, programming language design, Clang/LLVM, interpreters, JIT, runtime support, debuggers, OS internals, message-passing microkernels. Extensive experience with C++ STL libraries, Windows, Linux, and WSL.
- Embedded systems design and development including RTOS and embedded stacks.
- Managing product specifications, designs, releases, and developer teams. Knowledgeable with GIT, Asana, Jira, lifecycle processes and project requirement definitions.
- As a Tai Chi instructor, I utilize a "Zen approach" to management, negotiation, and conflict resolution. I am people and customer focused, and work well leading and being a part of a team.

## Recent Experience

### Personal Projects

- ThreadMP - a synchronous message passing open source library for C++ std::thread.
- Shen KLambda C++ interpreter - an optimized LISP-like interpreter engine with garbage collection for the Shen AI LISP / PROLOG programming environment.

### 2019 - Current: Finicast Inc., San Mateo, CA - Senior Director of Engineering

Finicast is a seed stage start-up developing collaborative and scalable next-generation financial planning software.

#### Responsibilities:

- Lead and manage engineering teams to solve problems. Communicating with the executive team and all parts of the company to investigate and prioritize issues and solutions.
- Driving the C++ design and implementation of the compute database engine - the core competence of the Finicast software. Optimizing the use of algorithms, data structures, and design using best-in-class C++ practices for a robust, maintainable, and scalable architecture.

- Directing the product development and release processes, managing system administration and devops teams to design and implement data center servers, disaster recovery, and SOC2 compliance workflow.
- Full stack development of customer-facing apps written in Javascript, React, NodeJS, MySQL and other technologies.
- Task scheduling, design documentation, and system architecture design.
- Co-authored patent application with over 100 claims (patent pending).
- Built Finicast's first data center with servers, Splunk monitoring, and disaster recovery, with an uptime guarantee of 99.95%

### **1998 - Current: ImageCraft Creations Inc., Palo Alto, CA - Co-founder and Technical Director**

Co-founded ImageCraft to provide embedded systems software and hardware tools.

Designed and implemented:

- Smart.IO™ architecture and firmware. Smart.IO is a C/C++ toolkit and API for creating programmable UI for embedded systems on smartphones with no wireless or app coding.
- REXIS, a message passing microkernel.
- C/C++ JumpStart API for microcontroller hardware abstraction.
- Code generators and front end modifications for ARM Cortex, Atmel AVR, MSP430, Freescale CPU12/HC11, Parallax Propeller, and Cypress PSoC1, using the LCC portable C compiler framework, and BURS rewriting system.
- The embedded industry's first whole-program compression optimizer.
- Firmware examples for Cortex MCU, I2C, SPI, UART, RTOS, Wifi, TCP/IP, USB. Debugged and integrated lwIP TCP/IP stack with REXIS RTOS.
- C library functions.
- Windows IDE.

Led development of:

- Android and iOS Smart.IO phone apps.
- Multiple releases of C/C++ compilers/IDE/debuggers based on LCC and GCC.
- MIO, a machine independent optimizer with Common Subexpression Elimination, Code Hoisting, Value Propagation, SSA conversion.
- CodeBlocks (an open source IDE) modifications to be more user friendly.
- Embedded systems educational kits, and the Wifi2go Internet-of-Things module.

Defined and set product goals and managed product releases. Negotiated multi-million dollar contracts with silicon vendors (including Atmel, Freescale, Cypress, and Parallax) for compiler work and resale.

Responsible for hiring and managing employees, contractors and consultants in the USA, Australia, Germany, India, and Bulgaria. Also responsible for product branding, client support, marketing, and overseeing website development.

## **Previous Experience**

**HP, Cupertino, CA - Technical Project Manager**

UCode code generator project manager at HP's California Language Lab. Managed a team of 10 members responsible for the PA-RISC and Itanium compilers. Ensured that the team released the critical first compiler on schedule.

#### **HP, Cupertino, CA - Senior Software Engineer**

Member of the UCode code generator project. Wrote the first code generator for the HP/Intel Itanium backend using BURS (Bottom Up Rewrite System), and worked on the PA-RISC code generator. Interacted with the optimizer and front end teams on project requirements and product releases.

#### **DEC, Nashua, NH - Senior Software Engineer**

Member of the GEM Optimizing Compiler team. Wrote the Intel x86 backend and contributed to the Windows NT runtime support. Worked on the MIPS and VAX-11 backend.

#### **Whitesmiths / Intermetrics, Westford, MA - Software Engineer**

Member of the compiler team. Proposed and was charged with designing and implementing a machine-independent optimizer using Structured Data Flow. Exceeded the goal of improving compiler effectiveness of the 68K and PDP-11 compilers by more than 20%.

#### **LTX, Norwood, MA - Software Engineer**

Rewrote the MC68000 byte code interpreter from C to assembly language. Improved performance by 100X.

### **Education**

Currently enrolled in Berkeley Haas School's Chief Technology Officer (CTO) program. Program completion date: July 2024.

M.S. Computer Science, Tufts University, Medford, MA. Thesis: "Subsumption Architecture-Based Multitasking Kernel for Robotics".

B.S. Electrical Engineering with a double major in Computer Science, Tufts University, Medford, MA.

### **Other**

2023 Hugo Award, Best Fan Artist, for my large format photography portrait project of genre creators, presented at the World Science Fiction Convention ("Worldcon") in Chengdu, China, October 2023.