

# Randall Maas

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## Professional Summary

Mr. Maas is a Software Engineer and Team Lead with significant experience in the Medical Device, Storage and Mechatronics industries, involved with the full FDA 62304 and 60730 software development lifecycles.

Embedded Controllers	Requirements Specification & Tracing
Medical Firmware	Design and Documentation
Device Drivers	Design Reviews & FMEAs
Remote Monitoring	IEC 62304, 14971, 60730
	IEC 60730, 60335, 62841

## Experience

May 2015-present

### **Toro – Consultant**

- Developed coin-cell powered Bluetooth LE sensor
- Developed brushless DC motor firmware
- Developed next generation hour meters with safety interlock systems
- Standards driven requirements development

Each included extensive documentation, requirements discovery and support for UL1998 / 60730

Aug 2014 – April 2015

### **Danfoss – Consultant**

Co-developed four next-generation CAN-based power controllers.

June 2012-June 2013

### **Devicix – Consultant**

- Developed a handheld application for water quality monitoring. This included implementing USB mass storage and bulk profiles
- Developed a ventilator blower prototype.

September 2010-  
May 2012; October  
2013-May 2014

### **Medtronic – Consultant**

- Demonstrated the feasibility of inductive recharge and an innovative “distance” telemetry for future products. This produced a product ready design.
- Implemented USB mass storage and VCOM profiles
- Wrote detailed design documentation; coauthored the hardware theory of operation; and revised the communication protocol specification.

March 2006-  
November 2009

### **Enteromedics – Sr. Principal Software Development Engineer**

As firmware team lead, delivered four generations of implantable medical devices (class III), using FDA-complaint software development and design controls.

This produced Enteromedics first market approved product (PMA issued 2013)

October 2002 -  
November 2004;  
Fall 2005-January  
2006

### **XIOTech Corporation – Consultant**

- Designed software components for monitoring and automatically configuring several product models
- Designed and wrote high-speed socket-based code for Linux
- Developed software for updating firmware in storage arrays & drives
- Modified SQL database to respond to field equipment issue
- Developed 3D-graphics tools to visualize performance & bottlenecks in customer-systems using performance data stored in an SQL database

October 1999 -  
April 2003;  
April 2004 - April

### **Medtronic, Inc – Consultant**

- Developed a microcontroller-based monitor for an implantable pressure sensor; this included a special feature to power the sensor via RF

- 2005**
- Developed hand-held application to display implantable sensor data
  - Developed software used to gather and transport data from an Implantable Hemodynamic Monitor to a central Server
  - Developed a microcontroller-based data-logger, recording onto secure-digital memory cards.
- February 1997 - October 1999**      **XIOTech Corporation**
- Developed the Netware & Linux device drivers for custom adapters.
  - Developed a socket-based link between the Magnitude Storage Array and Windows NT using FTP Software's TCP/IP stack.
  - Co-wrote the storage array's internal management console
  - Developed a library embedding circuit-level (JTAG) boundary-scan testing and FPGA updates into the Management Console
- July 1995 - 1997**      **Reality Interactive**
- Sept 1993 - 1995**      **Software development for various departments, Hamline University**
- Jul 1990- Aug 1993**      **University of Washington Applied Physics Lab**

**Education**

BA Physics – Hamline University

- Dean's List
- Alumni Award

University of Washington (Major in Physics)

**Engineering Tools****Hardware**

Intel 8051, Microchip PIC, AVR, 6802, Cortex M (STM32, Freescale Kinetis, NXP LPC, Silicon Labs, TI Tiva), Actel A2F200, Cypress PSOC, Silicon Labs EFR2, Cambridge Software Radio

**Operating Systems**UNIX (BSD, Mac OS X), Linux, Windows, Micrium  $\mu$ C/OS-II ( $\mu$ C/USB,  $\mu$ C/FS), Chibios**GUIs**Micrium  $\mu$ C/GUI (aka Segger), Swell Software C/PEG**Languages**

Assembly, C/C++, C#, Java, JavaScript, Matlab, Objective-C, openCL, GL Shader Language, Prolog

**Tools**

IAR, Keil, MDK, MCC, TI Code Composer, Eclipse+GNU C, Gimpel Lint, Microsoft Visual Studio, Requisite Pro, PVCS, SVN, Git

**Protocols**

Bluetooth LE, CAN, PPP, FTP, HTTP, custom TCP/IP protocols, JTAG &amp; SVF, I2C, SMBUS, SPI, USB

**Patents***System, apparatus and method for interacting with a targeted tissue of a patient*  
**United States 8,489,196***Safety features for use in medical devices*  
**United States 9,393,420****Writing samples**Please see <http://randym.name/> for some writing samples, including articles for Microsoft's "Coding 4 Fun" site. (C# and C++ projects)**Volunteer work**First Robotics mentor  
First Lego League Coach (past)