

Flip Sarrow
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HARDWARE ENGINEER

SKILL SUMMARY

I have been involved in several hardware projects. I have had a role as manager, as well as an individual contributor, in developing products in the medical, media, and other industries. My skills include:

Hardware Engineering: Experienced in ASIC, FPGA, CPLD, and PC Board designs using schematic capture, VHDL and Verilog design methodologies.

System Architecture: Involved in the design of the system architecture in all of the projects mentioned in this resume.

Software Engineering: Experienced in developing object-oriented designs using Java, Android, TCL, C++, and C. Developed assembly language software for the Microchip processor.

Enterprise Java: MVC (Struts), Tomcat, JDBC, JSP, Servlets, and XML

OS Experience: Linux, Windows, Windows XP embedded, UNIX, proprietary

Databases: MySql, HSQL, PostGres

Development tools: OrCad, Xilinx Vivado & ISE, Altera Quartus, Altium, Aldec, MicroSim, Eclipse, J-Builder, Netbeans, Ant, C++ Builder, MPLAB, Logic Analyzers, Oscilloscopes, In-circuit emulators, and more.

Communication: SERDES, USB, RS232, I2C, SPI, TCP/IP, GPIO, PCIe, DDR, WiFi, Ethernet

Industry Standards: MPEG, MP3, Vorbis, WMA, DRM, DiComm

Management: Involved in many projects in a managerial capacity, bringing projects from concept to manufacturing.

TECHNICAL EXPERIENCE

- **Flip Technologies, Inc. (Medical Ultrasound System)– May 2013 to Present**

- Developed a portable medical ultrasound device (Jan. 2015 to Present)***

- A joint venture project, with a Romanian company Romedex, to develop a miniature hand-held medical ultrasound device. Required FPGA development of DSP filters, modulators, and algorithms, 2D interpolation scan converter with pan and zoom, ARM CPU interface, and high speed SERDES interface. Software development implemented using C++.

- Developed a commercial music system for cafes and restaurant. (May 2013 to Dec. 2014)***

- Flip Technologies' own product. An embedded Java development with custom hardware design. Included graphic, database, and user control application development.

- Consulted on several various small, short term projects for several different clients, including:***

- Tax Studios, FrontRow, Sound Interventions

- **Imagize LLC – January 2012 to April 2013**

- Space grade high resolution camera for satellite system***

- FPGA and PC board development of a space camera system. The design includes a high speed, multichannel SDRAM arbiter and 2D vision processing algorithm implementation.

- **Device Anywhere – November 2008 to December 2011 (contract)**

- Developed mobile phone monitoring interface systems***

- FPGA design implementation for acquiring real time mobile phone video, audio, and user interface data to provide monitoring and test interface for remote user over the Internet. Xilinx FPGA was the main design task.

- **Optiscan, Corp. – November 2006 to January 2009**

- Developed a Glucose, Lactate Continuous Patient Monitor Instrument***

- Designed the electronic system architecture and most of the the digital control circuitry for a **near-infrared spectroscopy** instrument that produces a glucose reading every 15 minutes. Designed for the ICU, this instrument controls 40 pumps and valves, a centrifuge, and spectrometer to extract a blood sample so that glucose levels can be determined. The product's electronics include Xilinx FPGAs and CPLDs, ARM and X86 microprocessors, two DSPs, stepper motor drives, and position sensors. The FPGAs and CPLDs were designed using Verilog.

- **Zonare, Inc.**

- Designed a Beamformer Module for a Portable Medical Ultrasound Device***

- Responsible for developing a synthetic aperture module that digitally focused ultrasound beams in real-time. The project required high speed VHDL digital design utilizing two Xilinx Virtex Series FPGAs.

- Engineering Digital Design Manager***

Manager of 6 other engineers responsible for the digital hardware design of the portable ultrasound device.

- **Xcaliber, Inc. (contract)**

Designed Stock Option Trading GUI Client

Designed a Java based client application for on-line trading of stock options. The design required interfacing to a proprietary Tibco server (named JAXX) that provided the framework for stock option trading. The design utilized JDBC, Swing (JFC), and applet technologies.

- **Boston Scientific, Corp. (contract)**

Medical Ultrasound Scan Converter

Developed a PCI compatible image scan converter PC board for a medical ultrasound system. This high speed image processing module converted an acquired polar image to an XY raster image in real time. In addition, the board performed interpolation, fractional zoom, and video buffering. The design used Xilinx 4000 Series FPGAs and Cypress CPLDs.

- **Cognex Control Systems, Inc. (contract)**

High Speed Real Time Industrial Inspection System

Developed FPGAs and PC Boards for a high speed real time industrial inspection system using several proprietary DSP functions to automatically extract defects in fast moving metal and paper materials.

- **Telescan Systems, Inc. (contract)**

Video Advertising Kiosk

Video MPEG Decoder design for a video advertising kiosks . This was a portable, self-contained system that resided on a 3 by 5 inch PC board and interfaced to a standard CD ROM. Over 20,000 of these products were sold and used through out the world.

- **Endosonics, Corp. (contract)**

Gate Array and PC Board for Intravenous Medical Ultrasound Product

Developed a gate array ASIC for a synthetic aperture beamformer for a intravenous medical ultrasound beamformer. The gate array, using 0.8 micron CMOS geometry, performed several DSP functions at speeds of 50 Mhz. The project included a PC Board which connected 105 of these ASICs together.

- **Compression Labs, Inc. (contract)**

Video MPEG Decoder

Video Decoder Module design implementing a pipeline system architecture, MPEG processor, interpolating polyphase FIR filter, and video encoder. This module was part of a

project that decompressed encoded video images in real time.

- **Kranzbuhler, Gmbh (contract)**

- Medical Image Archiving System***

- A software project, written in C, that acquired images from a medical ultrasound machine and stored them so that they can be later displayed on the same machine. The system allowed diagnostic measurements on archived images

- **Medarc**

- Medical Image Archiving System***

- Developed an image processing PC board for a medical image archiving (PACs) system. This board was capable of real time 2D interpolation allowing fractional zoom, mosaic tiling, decompression, and general image processing of high resolution images.

- **Advanced Technology Laboratories**

- Next Generation Diagnostic Ultrasound Machine***

- Had role as Engineering manger and technical contributor in developing the companies next generation ultrasound machine. Responsible for managing ten engineers as well as developing software used in the focusing part of the system (the beamformer)

- **Advanced Diagnostic Research**

- Developed Several Diagnostic Ultrasound Modules***

- Was responsible for several projects that resulted in several PC Board designs with CPLDs for diagnostic ultrasound machines. The projects included a M-Mode scanconverter, a ultrasound display controller, a strip-chart module interface.

EDUCATION

- Bachelor of Science in Electrical Engineering, University of Florida, Gainesville, Florida
- Continued education with engineering and marketing courses at Arizona State University, Tempe, AZ. and California State University, Chico, CA.
- Attended several seminars and (Berkeley) extension courses on management, digital image processing, digital signal processing, and C++ and Java programming.