

Timothy E. Black

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Skilled with a "C" compiler, a soldering iron, an oscilloscope and a staff meeting, My ideal job uses all four.

Overview

- Has had complete system design responsibility for many projects.
- Has extensive experience with USB, Ethernet, Audio, Video, and Servo hardware.
- Expert in Hardware/Software system design, integration, and testing
- Skilled in rapid prototyping, system debug and problem analysis.
- Skilled with Oscilloscopes, logic analyzers, and other lab equipment.
- Skilled in reverse engineering of devices and protocols.
- Has brought up new boards, written device drivers and isolated difficult errors.
- Has worked with users to create systems based on perceived needs.

Key Skills

- **Senior Expert** in embedded system design and system level troubleshooting.
- **Expert Analog design skills**; sensors, servos, audio and video.
- **Senior Expert** in hardware/software interaction and debugging.
- **Senior Expert** coding in "C" for real-time embedded systems.
- **Excellent communications and a quality team player.**

Interface Skills

- **Analog design**; op-amps, a/d, d/a, power supplies, sensor conditioning, and accelerometers.
- **USB**; kernel drivers, diags, protocol analysis
- **Ethernet**; drivers, diags, line protocol
- **RS232, 422**; drivers, diags, protocol
- **IIC**; drivers, diags, protocol
- **Video processing**; feature extraction, movement detection.
- **Microcontrollers**; Hardware and firmware for PIC, Z8, Z80, Z180, Rabbit

Public Art Installations

- **L2K**: A 2000 foot long wiring harness with 200 controllers and 2000 light pods
- **The Hypknowtrons**: Spinning blades covered with hundreds of full color LEDs
- **STS**: A xenon spotlight converted into a audio transmitter with a 2800 watt class A amplifier

Work History:

Aug 1999 – current: Consultant, Quantalink and Oxford Associates

Worked for Sun Microsystems on the firmware and diags for the SunRay product line:

- Developed Ethernet and USB diagnostic test programs.
- Created test fixture for extended burn-in audio testing.
- Did extensive testing of USB device interaction and fault analyses
- Created a "patch gadget:" to enable testing of a new ASIC (saved \$500k)
- Helped troubleshoot stubborn manufacturing problems.

Projects for Quantalink include proprietary prototype development for several startups, a myoelectric pre-amp for MindTel, and several electronic art installations.

(The following sequence of short jobs reflects on the ephemeral nature of tech businesses and startups. I have taken

many risks with hopeful opportunities and good stock options. Most of these businesses are gone.)

Feb 1999 – Aug 1999: Senior Product Engineer, Avio Digital Inc. (www.aviodigital.com)

Avio tried (and failed) to design a new type of home networking. My tasks included working on reference designs, doing FCC type 15 measurements, working with EMI testing labs, and reverse engineering competitive products.

Feb 1998 – Feb 1999: Interface Wizard, Kodak Imagination Works (KIW)

KIW was a short-lived advanced research group for Eastman Kodak Entertainment Imaging. Prototypes were created to test new forms of user interfaces. A patent was filed for an invention I did using dual color TV cameras to track objects for a new kind of arcade game platform. Custom Video multiplexes were built and 'C' code written to do object tracking at full video frame rates. Interface devices were created to control lights and motors using PIC micros.

July 1997 – Jan 1998: Senior Software Engineer, Be Inc.

Be Inc. made BeOS, a multi-processor, multi-threaded, multi-media operating system. Tasks include writing device drivers (CAM-SIM SCSI format), testing and debugging kernel functions, and creating debugging tools.

Jan 1997 – July 1997: Senior Tech Support, Microtec VRTX RTOS

Responsible for interfacing with customers and recreating problems with the VRTX Real Time Operating System. Used HP 16500 logic analyzer to verify behavior of program test cases. Did testing and verification of new releases of compilers, debugging tools, and RTOS packages.

Nov 1994 - Dec 1996: Independent Consultant

A computer consulting office called Tech Knowledge is operated in Sedona. This office provided custom programming and system design for a wide variety of clients. Tasks included designing and testing a controller for a RAID based MPEG 2 Video server.

Aug 1993 - Oct 1994: Consultant , Spencer & Spencer Systems

Provided technical leadership for a team converting 15 year old mainframe PL/1 to GNU 'C'. Wrote a drawing generator in Gnu 'C' on a DG/UX 88k system with ESQ access to an Ingres database on a HP - Apollo X station. Wrote a 'C' program to interface a production testing device to a PC. The program provided Statistical Process Control charting from test runs. Rebuilt a 20 year old mainframe FORTRAN IV program to run on a Data General AViiON 88000 system and added a DXF file feed to Autocad Ver 11.

June 1992- July 1993 Senior Programmer, Print Research Tech.

Programming the main software of a press control in Metaware HighC 29K and 29K Asmb. Wrote the low level drivers for the AMD Mace Ethernet controller and ported the PhoenixPage postscript source to the PRT multiple- processor 29000 RISC system. Used Nucleus RTOS. Worked on the real time code for bringing up the new multi-processor system board. Did some system work for the in-house network (10baseT Ethernet, NFS) on Sun workstations

Oct. 1990 - July 1992 T. E. B. Engineering.

Owner of T. E. B. Engineering, Providing custom software to the cable and broadcast industries. Installed automation systems at many sites across the Midwest. These systems include an election tracking database package at WMC Memphis, a controller for movie playback with 50 VCRs in Warner Cable Houston, a system controller for WCSC, Charleston SC. and a retro fit system for Spectradyne, San Francisco. Tasks included on site troubleshooting and debug of new installations.

Mar 1984 - Oct 1990Asst., VP Engineering for Scripps Howard Broadcasting

Designed, wrote, and installed four complete newsroom computer systems, two commercial spot playback systems, two net delay systems, and several other systems. These systems included on-site installation, troubleshooting and hardware/software debugging.

May 1980 - Mar. 1984 R&D manager for KAVCO, Dayton Oh.

Responsible for the creation and production of a complete family of automation products. Managed the R&D office with six employees in Terre Haute. Wrote a number of embedded Z80 programs. Wrote a complete database system for automation support. Designed the hardware for interfacing to tape decks and switchers. Provided on-site support at trade shows and new system installations.

July 1978 - May 1980 Chief Eng. of E.S.I. Terre Haute IN.

Wrote an embedded 8080 program (4k in 1702 EPROM's) for a security system. Was responsible for repair of many different types of electronic systems, including NC punches, Sheeter mills, 50 HP DC motor servos, Video production and security systems.

June 1974 - July 1978 Electronic Tech for B&A Electronics Terre Haute IN

Designed and built audio/video editing systems and repaired aircraft avionics.

1972 - 1975 Indiana State University EE and CS majors

(quit to work full time, never looked back.)