

# ROSS MERNYK

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## SUMMARY

20+ years experience designing mission-critical electronic systems and software, 16 Patents, BSEE from MIT, Chief Engineer, Expert Witness in ITC case.

I have extensive experience in:

- Real-time programming (firmware, software)
- Microcontroller design and interface (hardware)
- Self-Testing device design (firmware, hardware)
- Working in high-volume, low-volume, and special projects environments
- Powerline arcing AFCI and ground-fault GFCI research and detection algorithms
- Device communications (protocol design, telemetry, packet telemetry, WiFi, Bluetooth)
- Microprocessor design/program: Arm Cortex, STM32, Atmel AVR, Pdauk, 68HC11, 6805, PIC16, PIC18, Z80, ST72
- Wrote and released Comport Commander, empowering technicians to create complicated device testing using simple scripting language
- High-level programming: Embedded C, Borland C, Microsoft Fortran
- Data collection, telemetry, logging, processing, and plotting
- Digital circuit design and interface (CMOS, TTL)
- X-10 and CEBus automation protocols

I have additional experience in:

- Sensor and transducer interface circuitry
- Patent writing, interpretation, prior art searches
- GFCI Expert Witness at International Trade Commission
- Oceanographic and environmental formulae and algorithms
- Representing companies at conferences and in customer contacts
- High-level / OOP programming: Java, C++, Basic, Algol, PL/I, Lisp
- Helping management and customers define products and user interfaces
- Direct international customer technical support, both onsite and by zoom
- Microprocessor programming: 8051, 8086, DOS/BIOS, 6502, Arduino
- Ergonomic user interfaces (hardware and software)
- Kermit, Xmodem, and proprietary transfer protocols

## EXPERIENCE

### **BIOLITE ENERGY, INC.**

Brooklyn, NY

1/19 – 3/24, Senior Firmware Engineer

- Designed complete stand-alone multi-tasking firmware for headlamps, lanterns, solar power collectors, and battery power distribution nodes.
- Extensive use of Embedded C on Arm Cortex processors.
- Devices employed active thermal management, PWM charging, LED PWM drive, MPPT solar power collection, battery power minimization.

- Overcame Arm supply chain issues using Padauk processors and writing in assembler.
- Supported mass production development, writing firmware with changing requirements and custom support for test engineers and ID team.
- Proposed and coded many new product features, enthusiastically approved by UI and ID teams.

**MECHOSYSTEMS, INC.**

Queens, NY

8/11 – 7/16, Senior Electronics Engineer

- Designed electronics, embedded firmware, and communications protocols, for networked automated window shades and control systems.
- Designed entire hardware and pic18 assembly firmware for multimodal interface node, with 5 soft and 2 hard uarts, 8 dry contact interfaces, multiple comm protocols, pipelined binary searched downloaded command maps interpreted real-time, code update over the network, infra-red receiver, 95 step onboard self-test, and full configurability over network.
- Wrote real-time embedded pic18 assembly code program which translates between 5 communication protocols in a router. Cooked entire multitasking kernel, with interrupt driven bit interleaved soft uarts, and 20+ fsm state machines.

**MEI & MARK LLP**

Washington, DC

1/11 – 3/11, Patent Researcher

- Performed prior-art searches on GFCI Technology related patents in a case before the International Trade Commission.

**PERKINS COIE LLP**

Washington, DC

1/08 – 6/08, Expert Witness

- Expert Witness on GFCI Technology in complex case at International Trade Commission.
- Pass & Seymour sued 15 respondents, including Trimone whom I represented.
- 63 claims in 4 patents asserted against Trimone.
- Produced appx 300 pages of expert reports and court presentations.
- ITC ruled non-infringement of all claims asserted against Trimone.

**LEVITON MFG. CO.**

Queens, NY

9/97 – 6/07, Chief Engineer

- Performed basic research and product development in electronics and firmware for powerline arcing and ground-fault detection equipment.
- Contributed considerable intellectual property and patents: Powerline arc detection AFCI, zero-cross alignment, X-10 communications, GFCI detection & self-test, binding algorithms and user interfaces.
- Designed hardware & firmware for device which communicates X-10 over powerline and RS-485 over twisted pair, while executing a finite state machine and synchronizing to a large network.
- Designed hardware & firmware for adaptive control of proprietary devices. Product communicates with network via LONworks Neuron chip, and performs timing sensitive local control by reading switches and sensors.

## ENDECO, INC.

Marion, MA

6/88 – 8/97, Consulting Engineer

- Developed hardware and firmware for a deployed acoustic current meter.
- Designed wireless RF packet telemetry field station, for collection of sensor data via analog interfaces, acoustic telemetry, SDI-12 bus, and customizable RS-232.
- Helped in product definition, and then implemented, an integrated control program for user-friendly real-time multi-site monitoring via wireless telemetry, including setup, operation, live plots, alerts, automated remote control, file plots, file transfer.
- Programmed OEM handheld terminal for menu-driven client server application, including sensor data logging, calibration, file transfer, user data entry.

## YSI, INC.

Yellow Springs, OH

5/89 - 8/97, Consulting Engineer

- Working closely in a small engineering team, helped define an intuitive user interface for YSI's dissolved oxygen meter, and for the EPA BOD test. Then wrote a program to operate the meter by PC, and guide computer-illiterate users through the EPA test.
- Developed integrated program for processing, plotting, and transfer of data files. Interfacing with several groups within YSI, I was able to satisfy demands on functionality, aesthetics, performance, and ease of use.
- Created a complete network protocol, YSInet, for real-time, multi-site, multi-medium communications, including data collection, device control, and education.

## EDUCATION

### MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Cambridge, MA

Course work completed May 1985

BSEE with Thesis completed December 1987

- Thesis title: An Implementation of a Sailboat Autopilot.
- Excelled in all design courses and Thesis.
- Special courses taken: Digital Design Lab, Mechanical Design Lab, Thermodynamics, Computation Structures, Computer Systems Design, Exploratory Data Analysis.
- Studied finite state machines, microprocessor systems, TTL digital hardware, team projects, mechanical designs, machine shop, generating raster scan video.
- Humanities concentration in psychology.

## PATENTS & CREDITS

- **16 Patents** in Arc fault detection, Ground fault detection, Circuit interruption, Self-test, and Networking
- **Listed** in Who's Who in Science and Engineering, and Who's Who in America, 2000 through present editions
- **Presented** "The Endeco Data-Watch Adaptive Packet Telemetry System," Ross Mernyk, *Oceans 87*, September 29, 1987, Halifax, NS.

## BACKGROUND

Born and raised in New York City. Educated at Saint Ann's School in Brooklyn NY. Passionate about improv, contra dancing, photography, brainstorming, and bacon.