

Mitchell J. Maifeld, PE, DFE

d/b/a Zenzic Research

Board Certified Diplomate in Forensic Engineering by the NAFE

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Detailed research and forensic analysis of software, electronics and electrical systems.
Special skills in self-driving/autonomous vehicles, electrical fire investigation,
electromagnetic radiation, digital circuits, hardware/software interface, audio & video.

Credentials

Registered Professional Engineer

Texas state license #119309; Ohio state license #73187

Bachelor of Science in Electrical Engineering

1993-1997 Iowa State University Ames, Iowa

Graduate work in FPGAs and silicon devices

2003-2004 Villanova University Villanova, Pennsylvania

Self-Driving Car Engineer nanodegree

2016-2017 Udacity online

Accomplishments

Forensic Engineering Examples

Deduced how a computer-controlled personnel-management interlock was intentionally defeated

Applied a novel statistical standard to test an entire warehouse full of electronic products

Reported on NEC code violations in a commercial remodeling project

Investigated residential electrical and electronic damage in insurance claim for a lightning strike

Discovered an anomaly in a model helicopter radio-control system which caused an injury

Determined why all compact-fluorescent bulbs in a business repeatedly expire

Found the defect in a wind turbine current transformer with inaccurate readings

Forensic Fire Investigations of Electrical Ignition

Investigated fires involving products: air compressor, water heater, dehumidifier, electric dryer, coffee pot, microwave, table lamp, furnace & others

Inspected fire locations such as cars, campers, homes, apartments, businesses, and laboratories

Forensic Analysis of Electromagnetic Radiation

Surveyed and calculated electric and magnetic fields near high-voltage transmission lines

Calculated nominal exposure from public WiFi systems and from cellular base stations

Forensic Reverse Engineering Digital Design

Analyzed digital answering machine to determine disposition of recorded message

Self-Driving Car Software

Wrote AI software with a team to drive an experimental self-driving car on a test track

Custom Animation Software Systems

Developed OpenGL render engine with MPEG-2 compression to generate 80 GB of video

(continued)

Experience

Computing Software

- TensorFlow, Python, Perl, C/C++, Visual BASIC, FORTRAN 77, MATLAB
- VHDL, Verilog; SQL, MySQL
- Drupal, HTML, JavaScript, CSS, PHP, CGI

Computing Systems

- Linux and most UNIX flavors: Arch, Ubuntu, Gentoo, Debian; IRIX, HP-UX, AIX
- Computer and Network Architecture, Concepts, and Protocols
- Handheld-Platform Software Development

Manufacturing and Industrial Applications

- Logic Analyzers and Oscilloscopes in Electronics Debugging
- In-Circuit Test System Development and Implementation
- Electronics Functional Test Design, Production, and Operation; Defect Location and Correction
- Distributed Control System and PLC software in chemical industry process instrumentation

Work History (reverse chronology)

Consulting Engineer in Private Practice

(present – September 2004) Zenzic Research; Katy, TX 77493

Commercial Applications Software Engineer

(September 2004 - March 2003) Lockheed Martin, Corp.; Valley Forge, PA 19481

Electronics Test and Debug Engineer

(August 2002 - May 2001) Teknetix, Inc.; Parkersburg, WV 26101

Control Systems Engineer

(May 2001 - September 1999) E. I. DuPont de Nemours & Co.; Washington, WV 26181

Software Engineer

(August 1999 - May 1997) Engineering Animation, Inc.; Ames, IA 50010

Memberships

Institute of Electrical and Electronics Engineers (IEEE): Member and various past officer positions

IEEE Houston Consultants Network: Board Member and Webmaster

ASTM International, Committees E58 on Forensic Engineering and E30 on Forensic Sciences

Subcommittee Chair of E58.04 for Electrical Incidents

National Academy of Forensic Engineers (NAFE): Member, Board Certified Diplomate in FE

National Society of Professional Engineers (NSPE) and Texas Society of Professional Engineers (TSPE)

Scouting America (Boy Scouts), Eagle Scout and Troop Committee Chair of Troop 567 in Katy, Texas

Patents

Wireless PDA-platform locator device; Patent Number 7,263,375

J. Zavada and O. Garrison co-inventors