DESIGN RESEARCH ENGINEERING
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JOEL T. COWELLS, P.E.
Senior Project Engineer

PROFESSIONAL PROFILE

Senior Project Engineer in Electrical Engineering at Design Research Engineering (DRE) specializing in electrical and electronic system hardware and software. Expertise in hardware and software algorithms for vehicle embedded control systems including diagnostics and communication networks. Analysis and testing of vehicle electrical systems field performance including engine control systems, brake systems, supplemental restraint systems (SRS), and others, including various aftermarket products. Expertise in electrical and electronics systems for non-automotive transportation equipment and machinery, including motorcycles, off-road vehicles, lawnmowers, micromobility devices, and others. Proficient in vehicle Event Data Recorders (EDRs) and other data retrieval and analysis, including passenger vehicles, heavy trucks, and infotainment ECUs, and 3D digitization of accident vehicles and sites. Failure analysis investigations of residential, commercial, and industrial electronics, wiring, and controls.

Prior to joining DRE: Senior Engineer in Exponent's Electrical and Semiconductors practice. Also worked at General Motors Corporation, involved in algorithm definition and software development for powertrain control modules, vehicle level integration and testing, and performing root cause analysis of identified issues. Developed expertise in problem identification and resolution by performing Failure Mode and Effects Analyses.

EDUCATION AND HONORS

M.S. (Computer Engineering) Wayne State University, 2003
B.S. (Electrical and Computer Engineering) Wayne State University, 2001

Tau Beta Pi Engineering Honor Society
Wayne State University College of Engineering Alumni Assoc. Outstanding Graduating Senior Award
Wayne State University Presidential Scholarship
General Motors Intern Scholarship

LICENSES AND CERTIFICATIONS

Licensed Professional Engineer, Michigan, #54704
BERLA iVe Certified Vehicle System Forensic Examiner, Operator, and Technician

PROFESSIONAL MEMBERSHIPS

Member, Society of Automotive Engineers (SAE)
Member, Institute of Electrical and Electronic Engineers (IEEE)

CONTINUING EDUCATION

BERLA iVe Vehicle System Forensics Course
ADAS Application: Automatic Emergency Braking, SAE C1704
Northwestern Center for Public Safety, Traffic Crash Reconstruction 1, CI-TCR10 081020
Air Brakes Training Program, Bendix ABT101
Accessing and Interpreting Heavy Vehicle Event Data Recorders, SAE C1022
Bosch CDR Tool Technician Training, IPTM Course 02127-4002
Applying Automotive EDR Data to Traffic Crash Reconstruction, SAE C1210

Acquiring and Analyzing Data from Sensors and In-Vehicle Networks, SAE C0522
Vehicle Accident Reconstruction Methods Seminar, SAE C0416
Sensors and Actuators Seminar Modules 1-3, SAE 97019, 97020, and 97021
Crash Data Group EDR Summit, multiple years

PUBLICATIONS

A Guide to Developing and Implementing Safety Checklists: Plant Steam Utilities. American Institute of Chemical Engineers, Spring National Meeting, 44th Annual Loss Prevention Symposium, San Antonio, Texas, March 22-24, 2010 (with Fecke MT, Martens JD, and Morrison DR).

Root Cause Analysis of a Cryogenic Refrigeration System Explosion. American Institute of Chemical Engineers, 43rd Annual Loss Prevention Symposium, Tampa, Florida, April 26-30, 2009 (with Morrison DR, Martens JD, and Ogle RA).

Accident Investigation Using Process Control Event Diagrams. American Institute of Chemical Engineers, 24th Annual Center for Chemical Process Safety (CCPS) International Conference, Tampa, Florida, April 26-30, 2009 (Morrison DR, Martens JD, and Ogle RA).