Chris Caruso
Curriculum Vitae

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TECHNICAL EXPERIENCE

2023 – Present | ASC Forensics

- Merged Automotive Safety Consulting, Inc. with ASC Forensics

2007 – 2023 | Automotive Safety Consulting, Inc.

- Analyze passenger vehicle crashes and determine performance of applicable safety systems
- Identify defects or deficiencies in occupant protection systems, if applicable
- Research and analyze feasibility of safety system technologies for mitigating permanent or fatal injuries in a wide variety of field relevant crash conditions such as frontal impact, side impact, rollover, and rear impact collisions
- Provide download and interpretation support for Crash Data Recorders

2003 – 2006 | Technical Manager – Automotive Safety Systems – Delphi Corporation

Mexico Technical Center – Juarez, Mexico

- Expert Technical Lead of all engineering disciplines (Systems, Mechanical, Electrical, Software, Test) on the development and product engineering of the Passive Occupant Detection System (PODS-B) for advanced airbag systems
- Initiated Advanced Development Project for major revisions to existing PODS-B algorithm and electronic technology
- Regularly travelled to international locations to investigate and diagnose problems with PODS and SDM systems in customer vehicles in the field or during development testing
- Provided regular training classes in Airbags (SIR) and PODS systems to existing and new engineers on the Delphi and customer teams
- Ran technical design reviews for PODS ECU at each development and production release
- Directed and supported continuing development of SDM, EFS, SIS and other airbag related technologies

2002 – 2003 | Engineering Group Manager – Delphi Delco Electronics

Mexico Technical Center – Juarez, Mexico

- Managed engineering teams developing software, systems, and test engineering aspects of PODS-B and SDM projects
- Developed processes and procedures for effective development and execution of engineering tasks
- Provided customer training on product and technology
- Regularly traveled to customer designated locations to evaluate product performance anomalies and issues
- Received regular feedback from customers regarding excellence of work performance and dedication to the product and customer teams

1999 – 2002 | Advanced Product Development Engineer – Delphi Delco Electronics Systems

Kokomo, Indiana

- Developed next generation frontal and side airbag sensing systems
- Reviewed and evaluated the methods, procedures and processes for the development of the next generation airbag sensing systems
- Worked directly with customers on implementation, testing and validation of dual stage airbags, seat belt pretensioner systems, rear impact, side impact and dual threshold systems
- Provided technical support to the rollover system development team regarding algorithm design, sensor technologies and application of signal processing techniques
- Attended monthly meetings with the airbag technology team in Vandalia, Ohio developing multi-stage, variable level and dual stage airbag technologies
- Patented 6 major crash sensing algorithm techniques used for frontal impact and side impact airbag systems
- Supported all customer field investigations related to problems observed in system performance
- Evaluated potential airbag system defects during vehicle development and during accident investigations, and then subsequently developed corrective actions and solutions to remedy any defects found

1999 | Senior Development Engineer Automotive Safety Systems – Delphi Delco Electronics Systems

Wuppertal Technical Center – Wuppertal, Germany

- Created an Automotive Safety System development group in the Wuppertal Technical Center supporting 8 local German engineers

1995 – 1999 | Advanced Algorithm Development Automotive Safety Systems – Delco Electronics
Kokomo, Indiana

- Developed algorithm design and techniques for the new Electronic Frontal Sensor (EFS) for frontal crash detection
- Directly supported the development of the Side Impact Sensor (SIS) algorithm and signal processing
- Reviewed and evaluated the methods, procedures and processes for the development of the airbag sensing systems
- Designed Single Point Sensing and Diagnostic Module (SDM) algorithm
- Developed theory and application for signal processing of input acceleration data for the next generation SDM sensor design
- Designed the application algorithm for the dual axis (90 degree and 45 degree) accelerometer technology
- Engineered the Safing techniques for Frontal and Side Impact airbag systems using the SDM accelerometer data
- Designed the low cost Crash Data Recorder (CDR) for application on field vehicle regardless of the use of an SDM
- Advocate of multipoint crash sensing systems upon the advent of the dual threshold and dual stage technology. Most other suppliers would initially claim single point was still feasible, but would eventually switch to an EFS based system.
- Detailed analysis of crash test data to determine sensing system design and performance
- Troubleshooter for sensor issues in crash tests and field performance
- Developed sensor specifications for crashworthiness
- Analyzed vehicle structures to determine optimum sensor technology and placement for meeting crashworthiness targets
- Provided technical support to the Rollover system development team for rollover sensor and low G accelerometer technology selection and implementation
- Developed next generation airbag sensing systems with major OEM's worldwide

1989 – 1995 | Lead Systems Engineer – Automotive Safey Systems – Delco Electronics Corporation

Kokomo, Indiana

- Generated techniques and concepts for the first generation SDM system
- Lead Calibration engineer for electro-mechanical and electronic crash sensing systems
- Developed theory and supported technology investigations for mechanical dual pole arming sensor design
- Assisted Breed Automotive in the development of a new ball/tube sensor design for frame rail applications
- Developed the "Sensor Mounting Guidelines Document" for establishing customer requirements for the location and structural design for optimized crash sensor applications. Continually updated this document to reflect the continually changing technologies.
- Presented a paper at SAE in 1991 entitled: "Experimental Technique for Measuring Cross-Axis Sensitivity of Automotive Crash Sensors"
- Resolved major customer development issue regarding the performance of single point sensors on their vehicle application
- Frequently led customer meetings worldwide supporting the development, application and improvement techniques for airbag system implementation
- At the forefront of the technologies and application of sophisticated sensing systems on cars, trucks, SUVs and heavy duty vehicles
- Regularly invited to customer locations to present and train their teams in the technologies and applications of mechanical, electronic and combined crash sensor designs
- Detailed analysis of crash test data to determine sensing system design and performance
- Troubleshooter for sensor issues in crash tests and field performance
- Developed sensor specifications for crashworthiness
- Analyzed vehicle structures to determine optimum sensor technology and placement for meeting crashworthiness targets
- Developed airbag sensing systems with major OEM's worldwide

1987 – 1989 | Delco Electronics Resident Engineer – Breed Automotive Corporation

Boonton, New Jersey

- Worked with calibration leader to develop and implement calibrations for airbag systems on all GM vehicles circa 1988
- Successfully rolled out completed ball/tube sensing systems for several GM vehicles by 1990 MY.
- Supported the development of the processes and testing to insure reliable performance of the first generation ball/tube sensors
- Participated in the development and verification of the 3D ball/tube sensor model for optimized simulation capability
- Developed a cross-axis test fixture to evaluate the sensitivity of the ball/tube sensor to off axis vibrations
- Directly interfaced with GM customer teams providing calibrations, development sensors and test support during the key development of the sensing system

1986 – 1987 | Systems Engineer – Advanced Vehicle Systems – Delco Systems Operations

Santa Barbara, California

- Developed the Near Obstacle Detection System as part of advanced engineering team
- Selected the technology which eventually became the FOREWARN system
- Developed range and target acquisition data for the development of the NODS system
- Field tested 3 different competing object detection systems on a Chevrolet Lumina vehicle throughout Southern California
- Brought Mechanical engineering expertise to an engineering team which was deep skilled in Electronics
- Mechanical expertise was selected to support a resident engineering assignment at Breed Automotive Corporation developing Electro-Mechanical crash sensors

1979 – 1986 | Engineer in Training – Process Engineering – GM Fisher Body Division – GM Trenton, NJ

- Various engineering and management work assignments during 5 Year GMI Cooperative education program
- First GMI Graduate at FB – Trenton to graduate directly to engineering, all prior graduates first went into Production Line Supervision
- Production and Process engineer in Injection Molding and Extrusion of plastics for automotive hardware
- Reported directly to 1st Shift Chief Engineer while being solely responsible for all manufacturing processes during 2nd and 3rd shift operations

EDUCATION

- Master of Science in Engineering, Arizona State University – 1986
  - Specialty in Solid State Electronics
  - Master's Thesis on Sub-Picosecond Photoconductivity
  - Research Assistant
- Dual Bachelor of Science in Electrical Engineering and Mechanical Engineering, General Motors Institute – 1984

ADDITIONAL SKILLS

- 6 Patents in Automotive Safety Technologies
- 2 SAE International Congress Publications and presentations for Automotive Safety Systems
- Delco Electronics Boss Kettering Award for Engineering Excellence
- GM Presidents Council Honors Award for Engineering Excellence
- Delphi Lead Award for Advanced Engineering
- GM People Make Quality Happen Award for Design Engineering Excellence
- Delphi Corporation Boron Recovery Award for Problem Solving
- Numerous other Awards and recognitions from GM, Delphi and other OEM customers.
- Fluent in Spanish

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