



Exponent®
Engineering & Scientific Consulting

Mario Maiorana

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Professional Profile

Mr. Maiorana has built a unique skill set over his 36 years in the automotive industry at General Motors (GM). While his focus has been on advanced driver assistance systems (ADAS), he has also worked on many new and emerging technologies including hybrid electric vehicle (HEV) and electric vehicle (EV) controls, on-board diagnostics (OBD), emissions controls, and electronic throttle control. He has held roles across many functional areas from design to integration, validation, and program execution. He was instrumental in the design and execution of Super Cruise, the industry's first hands free driver assist system. He has extensive leadership experience managing teams of over 170 engineers and managers in developing high tech and complex technologies. During his time in the industry, he grew his skill set in product development, regulations, functional safety, software and controls, team leadership, and in many other areas of vehicle design, development, and deployment:

- Diagnostic and emissions related regulations
- System definition and requirements
- Functional Safety – component and feature level
- Design failure mode and effect analysis (DFMEA)
- Fault Tree Analysis (FTA)
- Controls/software architecture, integration, and configuration management
- Vehicle/bench/simulation level validation testing
- Sensor and controller design and release
- ADAS Sensor fusion
- ADAS feature development
- Cost management
- Accident data analysis

In his most recent role as Chief Engineer - Super Cruise and ADAS, he led the teams responsible for development, integration and launch of GM's active safety and hands-free driving features. He was responsible for ADAS feature performance, cost, safety, and roll out across GM vehicle platforms. This includes balancing feature content and overall cost, development of sensor architecture, ensuring compliance to system safety case, and advancement and promotion of features across the GM product line. He was also the external voice for Super Cruise and ADAS features, communicating these complex technologies in a clear and understandable manner to the media and other outlets. He has also worked across many additional functional areas in the development of ADAS and Super Cruise at GM. This includes software and component design, system definition, and vehicle validation.

As an OBD II engineer, Mr. Maiorana was responsible for developing many of the initial diagnostic designs required to meet the newly introduced OBD II regulatory requirements. He worked with the

California Air Resources Board (CARB) to understand and provide industry feedback on the regulations. He also developed a deep understanding of emission control systems, which allowed him to diagnose many different components and their impact on vehicle level emissions. Mr. Maiorana coordinated with vehicle assembly plant staff, as well as the service community, to help them understand these new diagnostics and their impact on vehicle build and service procedures.

Mr. Maiorana also worked extensively on the introduction of electronic throttle control across GM's portfolio. As the lead systems engineer, he was responsible for the development of performance, safety, and cost requirements. He worked to create and review DFMEAs, as well as FTAs, in support of the overall safety of the product, while ensuring high-volume manufacturing requirements.

While working on HEVs and EVs, Mr. Maiorana led a team responsible for the controls and controller integration of the power electronics and battery management modules across multiple vehicle programs. He worked with his team of engineers to integrate embedded software and supported in-vehicle development and calibration for proper integration and performance.

Mr. Maiorana holds a BS in Electrical Engineering from GMI Engineering and Management Institute (Kettering University), and a MS in Engineering Management from Rensselaer Polytechnic Institute. He also sits on the Deans Advisory Council at his alma matter, Kettering University.

Academic Credentials & Professional Honors

M.S., Engineering Science, Rensselaer Polytechnic Institute, 1998

B.S., Electrical Engineering, GMI Engineering Management Institute, 1992

Academic Appointments

Deans Advisory Council – Kettering University

Prior Experience

Chief Engineer Super Cruise and Active Safety, General Motors, 2018-2023

Director Active Safety Electrical, General Motors, 2016-2018

Senior Manager Active Safety Validation, General Motors, 2015-2016

Engineering Group Manager Active Safety Software and Controls, General Motors, 2013-2014

Engineering Group Manager Strong Hybrid Controller Systems, General Motors, 2007-2013

Lead Control Design Systems Engineer Hybrid Systems, General Motors, 2000-2007

Systems Engineer Electronic Throttle Control, General Motors, 1997-2000

OBD Diagnostics Engineer, General Motors, 1992-1997

Patents

US Patent 8,248,023: Method of Externally Charging a Powertrain

US Patent 7,900,726: Method and System for Hybrid Energy Management Control

US Patent 7,537,542: Controls System Architecture for a Hybrid Powertrain

US Patent 6,659,080: Methods and Apparatus for Adjusting a Throttle of a Vehicle Engine

US Patent 6,513,492: Limited Acceleration Mode for Electronic Throttle Control