Curriculum Vitae

C. Arthur (Art) MacCarley, Ph.D. PE.
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Specializations: Automotive electronics and control systems, electric and alternative fuel vehicles.

Employment

California Polytechnic State University, San Luis Obispo (1988-present)

Professor and former Department Chair, Electrical Engineering

Professor and former Program Director, Computer Engineering

Professor and former Department Head, BioResource and Agricultural Engineering

Director, Cal Poly Transportation Electronics Laboratory

Munich University of Applied Science (Germany)

Adjunct Professor, Mechanical & Electrical Engineering (Summer 2014,16,18,19 and Winter semester 2017)

Registered Professional Engineer, Electrical and Mechanical (Colorado, 1981-present)

Education

Purdue University, West Lafayette, Indiana
Ph.D. Electrical Engineering (Computer Engineering Specialization), 1987. Thesis: Advanced Digital Control.
University of California, Los Angeles, California
M.S. Electrical Engineering, 1978. Thesis: Electronic Fuel Injection Techniques for Hydrogen IC Engines.
B.S. (Cum Laude) Engineering, Mechanical/Alternative Energy Specialization, 1976.

Employment

9/16-1/17 *Munich University of Applied Science (Germany), Adjunct Professor, Mechanical Engineering.* Teach and supervise projects in Electric and Alternative Fuel Vehicles, Solar PV Systems.

3/88 to present *California Polytechnic State University, Professor, Electrical Engineering.*
EE Department Chair 2007-2010, Computer Engineering Program Director 2000- 2003, Dept. Head BioResource and Agricultural Engineering 2014-2015.
Administrative and academic responsibilities, teaching undergraduate and graduate courses in control systems, computer engineering, automotive engineering and alternative energy.
Research funded by NSF, DOE, DOT, Caltrans, PG&E and five industrial firms on advanced highway monitoring and control systems, electric vehicles, electronic engine controls and alternative fuels.

1/11-5/11 *Franklin Olin College of Engineering (Mass), Adjunct Professor of ECE.* Taught multidisciplinary engineering lecture/lab and senior elective “Automotive Technologies for a Sustainable Future”.

6/97 to 6/14 *Loragen Corporation, Advanced Technology Group, Principal Engineer*
Automotive and highway safety electronics R&D for US DOE, Caltrans, UC Berkeley, Hughes SBRC.

1/84 to 12/87 *Purdue University, School of Electrical Engineering, David Ross Fellow*
Research in microprocessor-based control systems and advanced indirect sensing methods. Lead teaching assistant for digital laboratory; instructor for two undergrad laboratories; teaching asst. for two grad courses.

8/82 to 9/83 *American Bosch Division of United Technologies, Springfield, MA., Senior Engineer*
Design and optimization of electronic diesel engine controls. Lead engineer, controls group, responsible for development and testing of electronic engine control algorithms.

5/82 to 8/82 *Consulting Engineer in Private Practice, Denver, CO.*
Designed, constructed and tested electronic fuel injection and ignition control system for natural gas fueled engines, for CNG Vehicle Equipment Co., Fort Collins, Colorado.

5/79 to 5/82 *Denver Research Institute, University of Denver, CO., Research Engineer*
Principle investigator on three programs involving the development and testing of alternative fuel engines and vehicles. Designed electronic engine controls and on-board metal-hydride hydrogen fuel storage systems.

9/77 to 5/79 *Hughes Aircraft Co. Digital Communications Lab, El Segundo, CA., Member of Technical Staff*
Design, analysis and computer optimization of circuits for NASA Space Shuttle, GMS2 and GOES satellites.

6/75 to 9/77 *Research Assistant, UCLA School of Engineering and Applied Science*
Designed electronic fuel injection and cryogenic hydrogen fuel storage system under US DOT grant.

Honors and Awards

Deans list, UCLA College of Engineering 1975 and 76.
Outstanding Thesis of the Year, College of Engineering Nominee for University Award 1978
Outstanding Research Paper of the Year, University of Denver Research Institute (1980)
Cal Poly Meritorious Promise and Professional Practice (MPPP) Award, 1990.
Award recipient, DOE/NIST New Invention Competition, 1992.
Most Inspirational Instructor Award, runner-up, 1989 and 1992.
Outstanding Faculty-Student Involvement Award, 1992 and 1993.
Outstanding Faculty Advisor, 1995, 1996, 1997, 1998.
Northrup-Grumman Excellence in Teaching and Applied Research Award, 1997.
Litton Industries Excellence in Research and Development Award, 1997.
SCCA/EVTC Electric Vehicle Racing Series, 4th and 2nd Place National Winner, Stock/modified Class, 1998, 99.
Society of Automotive Engineers "Best Oral Presentation" Award, SAE International Congress, 2000.
Computer Engineering Program Appreciation Plaque for service as Director of Computer Engr. 2000-2003.
Society of Women Engineers Team Tech Competition Project Advisor, Recognition Plaque, 2003.
Electrical Engineering Student Advising and Support Award, 2003.
Caltrans nomination for State of California Award for most cost-effective research of the year, 2004.
Society of Women Engineers Team Tech Competition Project Advisor, Recognition Plaques, 2004 and 2005.
Electrical Engineering Department Appreciation Award for service as Department Chair, 2007-2010
Cal Poly 20-year Service Award, 2008.
EE Student Award for “Best Stories”, EE Department Banquet, 2010.
Professional Recognition Plaque from Cal Poly Alumnus Astronaut Greg Chamitoff, 2009.
Recognition pin for service to the disabled community from Rory Cooper, Director of the Human Engineering Research Laboratories, University of Pittsburgh Medical Center, 2010.
BioResource & Agricultural Engineering Department Appreciation Award for service as Dept. Head, 2013-15
Faculty Fellow, Cal Poly College of Agriculture, Food and Environmental Science, AY 2015-16

Professional Society Memberships

Registered Professional Engineer (Electrical and Mechanical), Colorado, 1980-present.
Society of Automotive Engineers (SAE), Senior Member, 1976-present.
International Association for Hydrogen Energy (IAHE), founding member, 1977-1982.
Institute of Electrical and Electronic Engineers (IEEE), Senior Member, 1976-present.
Sigma Xi Scientific Research Society, 1980-present. Cal Poly Chapter President 1991/92.
American Society of Engineering Educators (ASEE), Senior Member, 1989-2010.
American Society of Agricultural and Biological Engineers (ASABE), 2013-2016.

Professional Service

Faculty advisor to 200+ senior projects, 25+ MS theses in electrical and computer engineering, 1988-present.
Faculty advisor of student or team winning the Hewlett Packard Senior Project of the Year Award, 1989, 90, 91, 92, 93, 95, 98, 99, 2000, 2002.
Deployed first EE Central UNIX computer system, using donated systems and components. 1988.
Produced first computer-typeset lab manual in College of Engineering, using UNIX TROFF/EQN, 1988.
Patent Disclosure “Indirect Sensing Method for Diesel Fuel Injection Quantity Control,” CP Foundation, 1989.
Specified, deployed and wrote practical users manuals for EE Dept. network of 15 UNIX Workstations, 1990.
Served as UNIX and network system administrator for the EE Dept., 1990-1999.
Presentations for Electrical Engineering Graduate Seminar almost every year since 1989.
Faculty Advisor and Branch Counselor to Cal Poly Student IEEE Chapter, 1990-97.
Cal Poly representative to Chancellor's Technology Transfer Task Force, 1993.
Cal Poly Academic Senator, 1993-95.
Principal Evaluator, US Dept of Transportation Federal Highway Administration Field Operational Test, “Evaluation of Video Intersection Detection System”, 1993-06.
Principal Evaluator, US Dept of Transportation Federal Highway Administration Field Operational Test, “Evaluation of Integrated Freeway Ramp Meter and Arterial Control System”, 1993-06.
Patent Disclosure “Rapid Battery Interchange,” Cal Poly Foundation, 1993.
Invited speaker for IEEE Central Coast Professional Section Meetings, 1995, 1999 and 2007.
Cal Poly Intellectual Property Committee, 1995-97.
Developed modern EE/CPE Embedded Systems Laboratory, teaching both Intel and Motorola MCs, 1996.

Founder and Incorporator of Loragen Corp., San Luis Obispo, CA (consulting and independent evaluation team of Cal Poly faculty and students) 1997.
Interviewed by KSBY News for technical opinion on ordinance banning cell phone use at gas stations, 1998.
Co-author of Cal Poly College of Engineering Mission Statement document, 1998.
Academic Senate Research Committee, College of Engineering Representative, 1996-99.
College of Engineering Strategic Planning Committee, 1997-98.
College of Engineering Research and Professional Development Committee, Chair, 1997-99.
Founder and faculty adviser, Cal Poly Electric Vehicle Engineering Club and Electric Racing Team, national winner of 4th place 1998 and 2nd place 1999. 1996-2012.
Expert witness for California Department of Transportation Legal Division (1999-present).
Director of Cal Poly Computer Engineering Program 2000–03.
Spent June-August of 2000 fundraising for CPE and EE; traveled to 18 companies throughout California. Resultant contacts and donations provide continuing annual support of CPE, EE and CsC.
Designated by Advancement Office in 2000 as the official contact between the College of Engineering and Bert and Candace Forbes, helping to secure $3 million dollar donation to Cal Poly CPE, half to the EE Dept.
Organized and offered the first Computer Engineering Program Banquet, September 2001.
Created first Industrial Advisory Board for the Computer Engineering Program, December 2001.
Founder and permanent faculty co-advisor of Cal Poly Computer Engineering Honor Society, Fall 2001-present.
Created and advised three Computer Engineering Capstone team projects with industrial collaborators.
Appointee, Caltrans working group on telecommunications, meeting annually 2002-present.
Raytheon Excellence in Teaching Award Selection Committee, 2004, 05, 06.
Raytheon Excellence in Applied Research Award Selection Committee, 2004, 05, 06.
Northrup-Grumman Excellence in Teaching and Research Award Selection Committee, 1999, 2004, 05, 06.
Developed and continue to operate Caltrans Detector Testbed on I-405 in Irvine, 2002-present.
Faculty advisor to the SWE *Team Tech* National Competition Team, 2003 (2nd place) and 2004 (1st place)
Developed "SIBS Bill Analyzer" computer program for Caltrans. Program for auditing and controlling state telecommunications costs, attributed with saving over $4 million in first year of use, 2004.
Member and Inter-committee Liaison, TRB Committee on User Information Systems, 2005-present.
Faculty advisor, Cal Poly Advanced Autonomous Vehicle Club, 2005-present.
Faculty advisor to the Cal Poly DARPA Grand Challenge Team, (semifinalists) 2005-06.
Chair of Tenured and Probationary Faculty Committee, Tenured Faculty Committee, and Probationary Review Committee, Cal Poly Electrical Engineering Department, 2005-06.
Developed Cal Poly EE "Control Systems" educational web site http://telab.ee.calpoly.edu/~amaccarl
Invited participant in the "Baker Forum", focusing on sustainability issues, 2006.
Completed short "CDR Certification Course" conducted by Collision Safety Institute, (for qualification as automotive crash data expert witness), Vallejo, CA, July 2006.
Co-organizer of special session "Next Generation of Driver Information Systems" at 2007 TRB Annual Meeting.
College of Engineering Domain 5 (Professional Development) Advisory Committee, 2007.
Member of SurGE, Cal Poly Sustainable Initiatives Working Group.
Participant in US Congressional Caucus meeting on "Education in Simulation and Modeling," 2007.
College of Engineering RPT Committee. Co-author of draft CENG RPT Policy Document, 2007-2009.
Represented Cal Poly at International Engineering Education Symposium, Seoul, Korea, 2009.
College of Engineering Project-Based Learning Center Committee, representing CPE, 2006-present.
College of Engineering Computers and Networks Committee, representing EE and CPE, 2006-present.
Founder and faculty advisor to interdisciplinary Electric Vehicle Engineering Club, 2007.
Active in many forums as advocate for improvement of research environment at Cal Poly.
Published lecture notes and laboratory manuals for 18 Electrical and Computer Engineering courses at Cal Poly, San Luis Obispo.
Principal Investigator on 36 funded research projects involving various areas of advanced controls and transportation electronics 1989-present, totaling over $3.5 million in external funding. All projects have involved and provided employment for undergraduate and graduate students. Complete list on request.
Member, National Academy of Engineering Transportation Research Board User Information Committee, 2006-
Member, College of Engineering Committee to write new Retention, Probation and Tenure Document, 2006-08.
Invited Speaker, Cal Poly Focus the Nation campus-wide event. Co-presented "Global Warming: Problems and Solutions, An Engineering Approach", Jan 31, 2008.
Invited Speaker, Cal Poly Kennedy Library Science Café. "My Methanol Motorcycle", Jan 28, 2009.

Department Chair, Electrical Engineering, 2007-2010. Among accomplishments were major fiscal restructuring, implementation of "Promise-keeping Policy" for assured student accommodation in required classes, and guidance of Department through ABET accreditation culminating in visit 2008.
EPIC Course instructor, 2008 and 2009 (solar-powered model car design and competition).
Volunteer GATE course teacher, Nipomo MESA Middle School, every year 2002-present.
Adjunct Professor of Electrical and Computer Engineering at Olin College of Engineering, Needham, MA, during Sabbatical leave 2011. Developed and taught new course on Sustainable Automotive Technologies. Co-developed and taught major revision of freshman introduction course "Real-World Measurements".
Created "Electric Vehicle and Battery Safety Course" with certification examination for Cal Poly Electric Vehicle Engineering Club. Offered course and certification exam to all interested Cal Poly students, Dec. 2011.
Created and taught new Cal Poly multidisciplinary engineering course "Automotive Technologies for a Sustainable Future", Winter quarter, 2012.
Recipient of Chevron Grant for support of student team projects in above course.
Co-recipient (with ME faculty) of Chevron Grant for support of Wind Energy Project.
Currently (2012) PI on Caltrans Division of Innovation and Research advanced detector testbed project.
Safety officer for Cal Poly electrical engineering department (2011-present).
Department Head, BioResources and Agricultural Engineering Department. Administrative duties, oversaw program accreditation 2005, served faculty and College as member of visioning enrollment committees, reactivated Industrial Advisory Board, created Annual Department News Magazine and weekly newsletters.
Assisted in securing the donation of 1060 advanced solar panels from Sunpower Inc, 2013.
Created Solar Photovoltaic System Engineering Course (BRAE 434) and installed Solar PV systems on BRAE office building and Rodeo Arena storage building as course projects, 2013-15.
Faculty Fellow and Technology Consultant to CAFES, 2015-16.
Preliminary design of 70kW Solar PV system for College of Agriculture Swanton Pacific Ranch, 2016.
First electrical engineering professor to exchange with Munich University of Applied Science, Fall 2016.

University Courses Developed

Major course revisions:

EE 342, Control Systems Laboratory. Designed lab, wrote new lab manual, 1988, 1994, 1996, 1998.
EE/CPE 319/359 Digital Design with Laboratory. Introduced PLDs, FPGAs, and CAD logic design methods.
BRAE 335, Internal Combustion Engines. Updated and redesigned Lecture and Laboratory, Winter 2016.

Created new courses:

EE 563 Graduate Seminar, 1989.
EE 514 Advanced Topics in Automatic Control, 1988.
EE/CPE 432 Digital Control Systems, 1989.
EE 434 Automotive Engineering for a Sustainable Future, 2013.
EE/CPE 472 Microprocessor Controls Laboratory, 1989.
EE/CPE 336 Microprocessor Embedded Systems Lecture and Laboratory, 1994.
CPE 350/450 Jointly created (2003), and instructor for CPE 350/450 capstone courses, 2006-2016.
EE470/471 "Automotive Technologies for a Sustainable Future", Winter quarter, 2012, 2013.
BRAE 240-5 Solar Engineering Laboratory Spring 2014
EE/BRAE 434 Alternative Energy Vehicles, Spring 2014,15,16,17,18.
BRAE 470/471 Special Topics "Solar PV Engineering". Fall 2014, 2015.
EE/BRAE 450 Solar Photovoltaic System Engineering, Winter/Spring 2016,17,18, 19.
Munich Univ of Applied Science: "Alternative Energies" Mechanical Engineering, Winter Semester 2016.

Course coordinator and major course redesign:

EE 436 and 336, Embedded Systems Laboratories, 1994-2004.
EE 342 Controls Laboratory 1993-2003, 1988-2000, 2006-2012.
EE/CPE 219,259,319,359 digital area lectures and labs, 1990-1998.
EE 432/472 Digital Control Systems lecture and laboratory. 1990-present.
EE 513, Linear Control Theory, 1988 – 2000.
EE 514, Advanced Topics in Automatic Controls, 1988 – present.

Created "Prof. MacCarley's New Control Systems Web Site" http://amaccarl.ceng.calpoly.edu/ControlsSystems , web site for courses EE302, 342, 432, 472, 513 and 514. Continuously updated 1998-present.
Created "Alternative Energy Vehicles" Web Site http://amaccarl.ceng.calpoly.edu/AltFuels/ courseware and reference web site for course EE/BRAE 434.
Created "Solar Photovoltaic System Engineering", http://amaccarl.ceng.calpoly.edu/SolarEngineering/ , a public-access courseware and information web site on solar PV system technologies, science, design and permitting.

Journal Publications and Book Chapters

"Development of a Sodium Borohydride Hydrogen Fuel Storage System for Vehicular Applications," Physica Status Solidi (A) Applied Research, pp. 315-321, 1976.

“Energy Primer”, contributed section “Hydrogen Energy”, published by Portola Institute, Santa Cruz, CA, 1976.

"Electronic Fuel Injection Techniques for Hydrogen Powered I.C. Engines,” International Journal of Hydrogen Energy, V5.2, Pergamon Press, Oxford, England, 1980. Co-author: W.D. VanVorst.

“Alternative Automotive Fuels Handbook,” Publication of National Science Foundation, under Grant No. ISP-8009001, administered by University of Denver Research Institute, 1981.

"State Feedback Control of Nonlinear Systems," International Journal of Control, V.43, No.5, 1986. Co-author: S. H. Zak.

"An Auxiliary Sensor Processor to Provide Real Time Fuel Delivery Feedback for a Microprocessor Based Diesel Engine Controller," chapter in SAE publication "Recent Advances in Electronic Diesel Engine Control" and 1987 SAE Transactions. Co-author: D. G. Meyer.

"A Study of Numeric Saturation Effects in Linear Digital Compensators," Electrical Engineering Technical Journal, Purdue University, School of Electrical Engineering, 1988. Co-author: D. G. Meyer (thesis advisor).

"An Indirect Sensing Technique for Closed-Loop Diesel Fuel Quantity Control," Society of Automotive Engineers Transactions, 1990. Co-authors: W. Clark and K. Nakae (students).

“Sample Rate Selection for Discrete Time Switching Controls”, IFAC Journal, International Assoc. for Mathematics and Computer Simulation and International Federation of Operational Research Societies, Pergamon Press, Inc. 1990

"Evaluation of Video Image Processing Systems for Traffic Detection," Transportation Research Record No. 1360, National Research Council, Wash. DC., 1992. Co-authors: S. Hockaday, D. Need, S. Taff.

"Video Cameras for Roadway Surveillance: Technology Review and Product Evaluation Results," Transportation Research Record No. 1410, National Research Council, Washington D.C., 1993. Co-authors: D. Need, R. Neiman.

"Video Technologies for Roadway Surveillance and Automated Detection," Society of Automated Engineers, Transactions, 1995. Co-author: L. Ponce.

“Advanced Imaging Techniques for Traffic Surveillance and Hazard Detection,” Intellimotion (journal), Vol 6 No.2, Partners for Advanced Transit and Highways, University of California, Berkeley, March 1997.

Evaluation of the Anaheim Adaptive Control Field Operational Test: Institutional Issues. Transportation Research Record - Journal of the Transportation Research Board, no. 1683, pp. 67-77. Co-authors McNally, Michael G., Steve Mattingly, James E. Moore, Hsi-Hwa Hu, C. R. Jayakrishnan 1999.

"Evaluation of Infrared and Millimeter-wave Imaging Technologies Applied to Traffic Management," Society of Automotive Engineers, Transactions, and chapter in SAE publication “Journal of Passenger Car Electronic and Electrical Systems”, 2001.

"Computer Vision Detection System for Network Model Validation," Transportation Research Record 01-3442, National Research Council, Washington D.C., 2001.

“Field Operational Test of Integrated Freeway Ramp Metering/Arterial Adaptive Signal Control: Lessons Learned in Irvine, California”. Transportation Research Record - Journal of the Transportation Research Board, no. 1811, pp. 76-83. Co-authors: Stephen P. Mattingly, Michael G. McNally, Daniel B., Mezger, James E. Moore, II 2002.

“Technical Evaluation of the Anaheim Advanced Traffic Control System Field Operational Test,” Transportation Research Record, National Research Council, Washington D.C., March 2004. Co-authors: J. E. Moore II, S. P. Mattingly, M. G. McNally.

“Methods and Metrics of Evaluation of Evaluation of an Automated Real-Time Driver Warning System,” Transportation Research Record, No. 05-1423, National Research Council, Washington DC, January 2005.

“A Study of the Response of Highway Traffic to Dynamic Fog Warning and Speed Advisory Messages,” TRB 06-3086, Transportation Research Record, National Research Council, Washington, DC, Feb 2007.

“Automated Consensus-based Data Verification in the Caltrans Detector Testbed“ Transporatation Research Record, Vol. 1993, No. 1, pp. 124-130, 2007, National Research Council, Washington DC, January 2007.

“A Spy Under the Hood: Controlling Risk and Automotive EDR” Risk Management Magazine, Vol. 55, Issue: February 01, 2008. Co-author: Peter Thom

Conference Papers and Published Articles

"Development of a Sodium Borohydride Hydrogen Fuel Storage System for Vehicular Applications," American Society of Aeronautical Engineers Conference on Future Transportation Fuels, AIAA Proceedings, 1976.)

"Electronic Fuel Injection Techniques for Hydrogen Powered I.C. Engines," Proc. Second World Hydrogen Energy Conference, Zurich, Switzerland, International Association of Hydrogen Energy, Coral Gables, FL, 1978. Co-author: W.D. VanVorst.

"Hydrogen Fuel Applications for Urban Transit," Proc. AIAA Society and Aerospace Technology Workshop, Los Angeles, California, 1979.

"Development of a High Speed Injection Valve for Electronic Hydrogen Fuel Injection," Proc. Third World Hydrogen Energy Conference, Tokyo, Japan, International Association of Hydrogen Energy, Coral Gables, Florida, September, 1980.

"A Study of Factors Influencing Thermally Induced Backfiring in Hydrogen Fueled Engines, and Methods for Backfire Control," Proc. Intersociety Energy Conversion Engineering Conference, American Society of Mechanical Engineers, Atlanta, GA, July, 1981.

"An Auxiliary Sensor Processor to Provide Real Time Fuel Delivery Feedback for a Microprocessor Based Diesel Engine Controller," SAE International Congress, Detroit, Mich., Feb. 1987. Co-author: D. G. Meyer.

"An Indirect Sensing Technique for Closed-Loop Diesel Fuel Quantity Control," Proc. Society of Automotive Engineers International Congress, Detroit, MI, 1990.

“Sample Rate Selection for Discrete Time Switching Controls”, Proc. 11th Triennial World Congress of the the International Federation of Automatic Control, Tallinn, Estonia, USSR. International Assoc. for Mathematics and Computer Simulation and International Federation of Operational Research Societies, Pergamon Press, Aug. 13-17, 1990.

"Computer Image Processing Techniques for Highway Traffic Monitoring," Proc. AMSE Workshop on Computer Applications in Transportation, UC Berkeley, California, 1991. Co-author: E. Sullivan.

"Testing and Feasibility of VIPS for Traffic Detection," Proc. Second International Conference on Applications of Advanced Technologies in Transportation Engineering, Minneapolis, MN, American Society of Civil Engineers, August 18-21,1991.

"Dynamic Extension of Static Traffic Flow Models for Computer Simulation," Proc. IEEE Pittsburgh Simulation and Modeling Conference, Pittsburgh, PA, May 1992. Co-author: E. Sullivan

"Evaluation of Video Image Processing Systems for Traffic Detection," Transportation Research Board Annual Meeting, National Research Council, Washington, DC, 1991.

"Video Cameras for Roadway Surveillance: Technology Review and Product Evaluation Results," Transportation Research Board Annual Meeting, National Research Council, Washington, DC, 1992.

"Video Technologies for Roadway Surveillance and Automated Detection," Proc. Society of Automotive Engineers International Congress, Detroit, January, 1995.

“Economic Analysis of Electric Vehicle Configuration,” 20th International Conference on Computers and Industrial Engineering, Kyongjo, Korea, 1996. Co-author: A. Seifoddini.

“Electric Vehicles – Promise and Reality”, quoted and contributed several pages on the state of the art of battery electric vehicles to US DOE-sponsored Renewable Energy Institute web site (no longer avail) 1996.

"Assessment of an Automated Driver Warning Systems: CAWS", Presentation and published notes for California Department of Transportation, Stockton, California, June 14, 1998.

Evaluation of the Anaheim Adaptive Control Field Operational Test. Presented at PATH Program-Wide Research Meeting, Richmond, CA, Mattingly, Stephen P., Michael McNally, James E. Moore, C. Arthur MacCarley, and R. Jayakrishnan. November 1998.

"EDSRS: Electronic Diesel Smoke Reduction System," Poster Session for the National Conference on Strategic Technologies, US Department of Energy, Office of Industrial Technology, Washington, DC., Jan 7, 1999.

"Infrared and Millimeter-wave Imaging for Traffic Surveillance and Detection," Proc. Transportation Research Board Annual Meeting, National Research Council, Washington D.C., January, 1999.

“Evaluation of the Anaheim Adaptive Control Field Operational Test: Technical and Institutional Issues.” Presented at the Transportation Research Board 78th Annual Meeting in Washington, D.C.. Coauthors: McNally, Michael G., Stephen P. Mattingly, James E. Moore, Hsi-Hwa Hu, R. Jayakrishnan, January 1999.

“Evaluation of the Irvine Integrated Ramp Metering/Adaptive Signal Control Field Operational Test: Post-Mortem for MOU 65315.” Presented at PATH Program-Wide Research Meeting, Richmond, CA, Coauthors: McNally, Michael G., Stephen P. Mattingly, James E. Moore. November 1999.

“Evaluation of the Anaheim Advanced Traffic Control System Field Operational Test: Introduction and Task A: Evaluation of SCOOT Performance.” Final report prepared under project RTA-65V313 for the U.S. Department of Transportation, Federal Highway Administration, Washington, D.C. (California Partnership for Advanced Transit and Highways (PATH), University of California, Berkeley, Research Report UCB-ITS-PRR-99-26), Coauthors Moore, James E., II, R. Jayakrishnan, Michael G. McNally, Hsi-Hwa Hu, Steve Mattingly, Seongkil Cho and James Roldan. July 1999.

"Evaluation of the Anaheim Advanced Traffic Control System Field Operational Test: Task B: Assessment of Institutional Issues." Final report prepared under project RTA-65V313 for the U.S. Department of Transportation, Federal Highway Administration, Washington, D.C. (California Partnership for Advanced Transit and Highways (PATH), University of California, Berkeley, Research Report UCB-ITS-PRR-99-27), Coauthors: McNally, Michael G., James E. Moore, II, C. Arthur MacCarley and R. Jayakrishnan with Steve Mattingly, James Roldan, Hsi-Hwa Hu and Seongkil Cho. July 1999.

"Review and Assessment of Battery Interchange Methods for Electric Vehicles," Proc. SAE Future Car Conference 2000, Society of Automotive Engineers, Washington, DC. January 2000.

"Evaluation of Infrared and Millimeter-wave Imaging Technologies Applied to Traffic Management," Proc. SAE International Congress and Exhibition, Society of Automotive Engineers, Detroit, March 2000.

"Battery Interchange Alternatives to In-Vehicle Charging: Technical, Safety and Economic Considerations," Proc. FISITA 2000 World Automotive Congress, Seoul, Korea, June 2000.

"Lessons Learned from Irvine Integrated Freeway Ramp Metering/Arterial Adaptive Signal Control Field Operational Test," Transportation Research Board Annual Meeting, 01-3354, National Research Council, Washington D.C., Jan 2001. Co-authors: S.P. Mattingly (student), M.G. McNally, J.E. Moore

"Computer Vision Detection System for Network Model Validation," Transportation Research Board Annual Meeting, National Research Council, Washington, DC, 2000.

"Evaluation of Video Traffic Sensors for Intersection Signal Actuation: Methods and Metrics," Transportation Research Board Annual Meeting, No. 02-3920, National Research Council, Washington DC, January 2002.

"Technical Evaluation of the Anaheim Advanced Traffic Control System Field Operational Test," Transportation Research Board Annual Meeting, National Research Council, Washington, DC, March 2003. Co-authors: J. E. Moore II, S. P. Mattingly, M. G. McNally.

"Methods and Metrics of Evaluation of Evaluation of an Automated Real-Time Driver Warning System," Transportation Research Board Annual Meeting, National Research Council, Washington, DC, March 2004.

"A Study of the Response of Highway Traffic to Dynamic Fog Warning and Speed Advisory Messages," Proc. Transportation Research Board Annual Meeting, National Research Council, Washington DC, Jan 2006.

"A Data Fusion Approach to Automated Vehicle Detector Testing" IEEE Digital Signal Processing and DSP in Education Conference, Teton, WY, Sept 2006.

"Automated Consensus-based Data Verification in the Caltrans Detector Testbed," Proc. 2007 Transportation Research Board Annual Meeting, National Research Council, Washington DC, January 2006.

"Global Warming: Problems and Solutions, An Engineering Approach", Invited Published Presentation, Focus the Nation, National Academic Initiative for Global Awareness, Jan 31, 2008. Co-authors: Yarrow Nelson, Linda Vanasupa.

"Adaptive Automatic Ground Truth Generation for Testing of Vehicle Detectors", 2009 Transportation Research Board Annual Meeting, National Research Council, Washington DC, January 2009.

"Teaching Sustainability in Cal Poly Electrical and Computer Engineering Programs", Presentation at UC/CSU Conference on Sustainability in Curricula, UC Santa Barbara, June 22, 2009.

"Retention, Promotion and Tenure Policies in the College of Engineering, California Polytechnic State University, San Luis Obispo", Televised presentation and proceedings publication, International Engineering Education Symposium, Seoul National Technical University, S. Korea, 2009. Co-author: M. L. Noori

"A Comparison of Real-time and Short-term Aggregated Metrics of Potential Accident Risk and Severity", Published via Digital Commons, California Polytechnic State University, San Luis Obispo, http://digitalcommons.calpoly.edu August 2011.

"Traffic Ground Truth Estimation using a Multi-Sensor Consensus Filter", accepted for publication and presentation at 2011 Transportation Research Board Annual Meeting, National Research Council, Washington DC, January 2012.

"Automotive Technologies for a Sustainable Future: Alternative Fuel Engineering Education with Emphasis on DME and Methanol as Transition Fuels," Fifth International DME Conference, Ann Arbor MI, International DME Association, London, England, April 2013.

"The Cal Poly Rapid Battery Exchange Project: Automated Battery Exchange as an Alternative to Fast-Charging of Electric Vehicles." IEEE Power and Energy Conference, California Polytechnic State University, San Luis Obispo, 2013.

Published Research Reports

"Development of a Multi-fuel Vehicle using Electronic Fuel Injection," Final Project Report, Regional Technology Advancement grant, US Department of Energy, Region 8, September, 1981.

“Acceleration of Automobiles Fueled by Natural Gas and Gasoline: A Comparison”, Report to the National Science Foundation, Published by Denver Urban Observatory and City of Denver, University of Denver Research Institute, 1982.

"Evaluation of Image Processing Technology for Application on Highway Operations," Final Report to the California Department of Transportation, TR 91-2, June 1991.

"Noise-Optimal Control of HEMT LNA's for Compensation of Temperature Deviations," The Telecommunications and Data Acquisition Progress Report, 42-109, NASA JPL/Caltech, May 1992.
Co-authors: J.J. Bautista, P.A. Willis.

"Evaluation of Closed-Circuit Television Technology for Application in Highway Operations," Final Project Report, Caltrans Contract 51J932, Caltrans Division of New Technology, San Luis Obispo, CA., 1992.

"Video Cameras for Roadway Surveillance: Technology Review and Product Evaluation Results," Report to the California Dept. of Transportation, Cal Poly Transportation Electronics Laboratory, 1992.

"Feasibility Study: Rapid Battery Interchange for Electric Vehicles," published study commissioned by Pacific Gas and Electric Co., Transportation Electronics Laboratory, Cal Poly EL/EE Dept. PR93-1, 1993.

"Rapid Battery Interchange Electric Transit Bus Demonstration, Phase I," final project report (published) to Pacific Gas and Electric Co. Transportation Electronics Laboratory, Cal Poly EE Dept. PR95-5, 1995.

"Design and Deployment Planning (Phase II), Rapid Battery Interchange Electric Transit Bus" Project report published by California Energy Commission. Cal Poly Transportation Electronics Laboratory PR96-1,1996.

"Design Considerations for Automated Electric Vehicle Battery Interchange," Transportation Electronics Laboratory, California Polytechnic State University, SLO, Report published by sponsor Pacific Gas and Electric Company, No. TEL4881a97, January 1997.

“City of Anaheim / Caltrans / FHWA Advanced Traffic Control System Field Operational Test Evaluation Task C, Video Detection System,” final project report, US Dept. of Transportation FHWA and Caltrans agreement No. SA 1272-18286, Partners for Advanced Transit and Highways, UC Berkeley, April 18, 1998.

“Video-based Vehicle Signature Analysis and Tracking, Phase 1: Verification of Concept and Preliminary Testing,” PATH publication based on final project report, Caltrans MOU 262, Cal Poly Transportation Electronics Laboratory Report No. TEL5881a97. Partners for Advanced Transit and Highways, University of California, Berkeley, January 10, 1998.

"Evaluation of Caltrans District 10 Automated Warning System, First Year Report," Cal Poly Transportation Electronics Laboratory Document TEL5881B98R, published by Partners for Advanced Transit and Highways (PATH), University of California, Berkeley, July 6, 1998.

“Video-based Vehicle Signature Analysis and Tracking, Phase 2: Algorithm Development and Field Testing,” final project report, Partners for Advanced Transit and Highways, University of California, Berkeley, 1999.

"Evaluation of Caltrans District 10 Automated Warning System, Second Year Report," Cal Poly Transportation Electronics Laboratory Document TEL5881B99, Published by Partners for Advanced Transit and Highways (PATH), Univ of California, Berkeley, March 4, 1999.

“Evaluation of the Anaheim Advanced Traffic Control System Field Operational Test: Executive Summary.” Final report prepared under project RTA-65V313 for the U.S. Department of Transportation, Federal Highway Administration, Washington, D.C. (California Partnership for Advanced Transit and Highways (PATH), University of California, Berkeley, Research Report UCB-ITS-PRR-99-18), Coauthors: McNally, Michael G., James E. Moore, II, R. Jayakrishnan with Steve Mattingly, James Roldan, Hsi-Hwa Hu and Seongkil Cho. July 1999.

"An Indirect Sensing Technique for Diesel Fuel Quantity Control," Final Report, U.S. Department of Energy, ERIP Project 583 Contract No. DE-FG01-94CE15583 May, 1999.

"Evaluation of SCOOT Performance in the Anaheim Advanced Traffic Control System Field Operational Test," Intellimotion, Published by Partners for Advanced Transit and Highways, University of California, Berkeley, November 1999. Co-authors: J. Moore, R. Jayakrishnan, M. McNally

"Evaluation of Infrared and Millimeter-wave Imaging Technologies," Project Final Report, Partners for Advanced Transportation and Highways, Feb. 2001.

"Documentation of the Irvine Integrated Corridor Freeway Ramp Metering and Arterial Adaptive Control Field Operational Test," California Partnership for Advanced Transit and Highways (PATH) Research Report UCB-ITS-PRR-2001-02, Report for MOU RTA 65V313-5, California Department of Transportation, Office of New Technology, Jan. 2001. Co-authors: M. McNally and J.E. Moore II.

“V2SAT Operators Manual“ published project deliverable under University of California Contract No. T01-65A0071-4122-L, California Department of Transportation, August 2002, with major addendum 2003.

“Calnet/SIBS Bill Analyzer Operators Manual”, deliverable under contract to Caltrans Division of Research and Innovation Contract, March 2004.

“Caltrans Detector Testbed / V2SAT Technical Report, 2004”, deliverable under University of California Purchase Order 0031 P 00 681648, California Department of Transportation, August 2004.

"Instrumentation and Evaluation of District 10 Caltrans Automated Warning System (CAWS)" Volumes 1-5, Document Nos. L-D10-FR-01 though -05, California Office of Traffic Safety (OTS) Grant RS0034, Caltrans Contract 51A0050, distributed by California Office of Traffic Safety, Sacramento, CA., Sept. 2005.
"Video Vehicle Detector Verification System Operators Manual," Project deliverable to California Dept. of Transportation and Univ. of California, Berkeley under Task Order 5327, 2006, and supplement 2007.
"Caltrans Traffic Detection Plan", Published report for the California Dept of Transportation under contract to Cambridge Systemetrics, Washington DC. 2008. Co-authors: Daniel Krechmer, Lawrence Klein.
"My Methanol Motorcycle", web site on my self-designed multi-fuel motorcycle, https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1292&context=eeng_fac 1998.
"What Your Car Knows About You that You Don't Know – Data Retention in Automotive Electronics". Invited presentation at over ten academic, professional and public forums and events, 2007-10.
"Electric Vehicle Safety", online tutorial at http://evec.calpoly.edu/ElectricVehicleSafety.pdf , sponsored by Cal Poly Electric Vehicle Engineering Club, November 2011.
"Methanol Fuel Safety – a Practical Guide", Available online through the Cal Poly State University Digital Commons, http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1345&context=eeng_fac , 2013.

Unpublished Project Reports (list on request)

Author or co-author of over 150 unpublished research reports for DOE, NSF, DOT/ FHWA, Caltrans, California Office of Traffic Safety, Hughes Electronics, UC Berkeley, UC Irvine, Raytheon, Northrup Grumman, and other corporate sponsors,1979-present.

Proposals Submitted

Author, co-author or major contributor to over 120 research proposals to state, federal and industrial sponsors. Approximately 50% funding success rate. List on request from Cal Poly Sponsored Programs Office.

Journal, Conference and Proposal Reviewer (lists of individual titles on request)

California Partner for Advanced Transportation and Highways, annual reviewer, 1991-present.
Prentice Hall, Academic Publishing Division, contract textbook review, 1995-2000.
Society of Automotive Engineers, World Congress and Transactions, annual reviewer, 1995-2003.
Society of Automotive Engineers, Transactions on Automotive Electronics, Associate Editor, 2009-present.
Transportation Research Board, National Academies. Reviewer for committees: Intelligent Transportation Systems, Visibility, Motorcycles and Vulnerable Vehicles, and User Information Systems, 1999-present.
IEEE Transaction on Intelligent Transportation Systems, annual reviewer, 2001-present.
Intelligent Transportation Journal, Pergamon Press, 1998, 99, 2003.
METRANS (Los Angeles Metropolitan Transit), annual reviewer, 2002, 04, 05.
Cal Poly C3RP proposal reviewer, 2005, 2006.

Issued US Patents

"Consensus-based Vehicle Detector Verification System." US 8179282B1, 2012, Assignee Cal Poly Corporation.
"Geometric Tactile Information Delivery System for the Visually Impaired." 2013, Co-inventor Dennis Fantine. Assignee Cal Poly Corporation.

Other Relevant Qualifications

Caltrans-appointed evaluator for HOV-lane enforcement system manufactured by Vehicle Occupancy Detection Systems, (7/13-6/14)
Operator of Cal Poly Alternative Fuel Facility dispensing methanol, DME and SVO (2005-).
Certified Crash Data Recorder (CDR) Analyst, training by Vetronix Div of Robert Bosch (6/06).
Owner/builder of two battery-electric vehicles, used for transportation and education (1998-).
Commute daily with self-constructed methanol-fueled ultra-low-emission vehicle (1988-).
Designer/installer of 4 residential and one commercial solar PV and thermal systems (1988/14).

Expert Witness Experience

Expert witness on retainer under three-year contract to the California Department of Transportation. Forensic electronics in highway applications, 1999-2002.

Federal evaluator for FHWA Field Operational Test of Advanced Integrated Traffic Management System for City or Irvine, California, 1995-1998.

Federal evaluator for FHWA Field Operational Test of Computer Vision based Intersection Traffic Detection System for City of Anaheim, California, 1995-98.

Evaluator/operator of Caltrans Detector Testbed, Irvine, CA. California Department of Transportation Division of Innovation and Research, for Evaluation of Intersection Video Traffic Detection Systems, 2004-2011.

Shackelford v United Stereo (expert for defendant). Fatality crash allegedly related to cruise control. Litigation against client dropped following my inspection report, 2005-2006.

Savagian v Advantage Ford, et, al. (expert for defendant). Multiple fatality crash allegedly related to vehicle stability enhancement system. Settled, for defendant, 2006-07.

Backe v Mercendes of Nanuet, Massachusetts and Daimler Chrysler Corp. (expert for defendant). Single fatality crash allegedly related to engine management electronics failure. Litigation against client dropped following my inspection, 2006-2007.

Expert analysis, nine vehicle inspections, report preparation as subcontractor to Peter Thom and Associates, Orinda, CA., 1990-2008. Automotive electronics related to product liability and wrongful death cases.

Lyon v. Hybrid Technologies Inc./EVii (expert for plaintiff). One of the first electric vehicle Lemon-Law cases litigated in California. Proved multiple defects and FMVSS violations by manufacturer. Settled in full following inspection report, 2008-2009.

Romero v Stowasser et. al. (expert for defendant, engaged by Murchison Cumming LLP). Automotive electrical system failure and resultant vehicle disablement. Lawsuit dropped following my inspection report, 2010.

Combustion Controls Inc. v. Harley-Davidson Corp., Milwaukee, WI. (expert for defendant). Patent infringement case related to electronic fuel injection. Token settlement paid by defendant. 2010 - 2011.

HTI LLC and Network Fleet Inc v. DriveOK, Webtech Wireless Inc, Procon Inc., and Xirgo Technologies LLC. (expert for defendants). Patent infringement related to vehicular wireless technologies. Case settled prior to significant action, 2011.

Vehicle Occupancy Detection Co. USA / Laser Optical Engineering Ltd England. Independent evaluation of HOV lane enforcement detection system. Study/report completed. June 2012 – January 2014.

Zavalla v Randell Equipment & Danfoss Power Solutions (expert for defendant, engaged by Youngerman McNutt LLP), injury accident, electrical system in specialized vehicle. 2013-15, settled favorably 2015.

UUSI/Nartron v. Brose GmbH and Robert Bosch GmbH (expert for defendants, engaged by Kirkland Ellis LLP), patent infringement case related to automotive electric window closure safety technology. Our clients sought IPR invalidation of two patents. 2013-15. Case resolved July 2015 with all contested claims invalidated.

Campana v. Rally Auto Group and State of California (expert for defendants, engaged by Murchison Cumming LLP), automotive fatality case. Found tampered airbag and SRS. Trial testimony. Client exonerated on tampering charges, but settled due to failure to disclose vehicle history. 2013-2016.

Lee/Baldwin v. Volkswagen Group of America, Inc. et. al. (expert for defendants, engaged by Murchison Cumming LLP) – failure of airbag to deploy. Litigation dropped following my inspection report, Jan 2015.

Fountain v. Hyundai Motor Company (expert for plaintiff, engaged by Taylor and English LLP.) Wrongful death, alleged defects of Electronic Power Steering system. Litigation dropped upon my recommendation following vehicle inspection. April 2015-Dec 2016.

Robinson v Taylor-Dunn (expert for defense, engaged by Meyers McConnell Reisz Siderman LLP.) Wrongful death allegations related to electric vehicle control systems. Lawsuit against client dropped after submission of my report. Nov. 2015 - November 2016.

Signal LLP v. Mazda Motor Corporation (expert for defendant, engaged by DLA Piper LLP). Patent infringement and IPR case related to RADAR-based Blind Spot Detection System. Summary judgement in client's favor following my deposition, January 2016 December 2017.

Chen v Soibatian (expert for plaintiff, engaged by Schwabe, Williamson & Wyatt LLP). Representing inventor of popular "Hoverboard" in infringement suit against multiple Chinese manufacturers. Case transferred to International Trade Commission for arbitration, settled favorably for client. March 2016 – June 2017.

UUSI LLC v AM General LLC (expert for defendant, engaged by Ropes and Gray LLP). Patent infringement defense and IPR related to electronic diesel engine control and starting assist systems. Declarations and IPR petition filed. IPR successful. Lawsuit settled favorably for client. June, 2016 – December 2018.

Signal LLP v. Fiat-Chrysler Automobiles (expert for defendant, engaged by Venable LLP). Patent infringement defense and IPR related to Radar anti-collision warning system and Passenger classification system for air-bag control. Declarations and IPR petition filed. Settlement favorable to client. Sept 2016 – February 2018.

Frac Shack v Atlas Oil. (expert for defense, engaged by Carlson, Gaskey & Olds, P.C.) Patent infringement and IPR related to automated refueling system for wellsite hydrofracturing equipment. IPR not instituted. January 2017 – December 2018.

Doebeck v Cobra Engineering (for plaintiff, engaged by Frisenda, Quinton & Nicholson LLC). Patent infringement and IPR related to motorcycle fuel injection tuning technology. Infringing product evaluation and claim charts completed. Expert report submitted. Unknown resolution. January 2017 – February 2018.

Signal LLP v Denso (expert for defense, engaged by DLA Piper LLP). Infringement and IPR related to collision avoidance system technology. IPR declarations, deposition completed. Favorable PTO decision, May 2017.

Electrojet v Stihl GmBH (expert for defense, engaged by McGuire Woods, LLP). Infringement and IPR related to automotive electronic fuel injection IP. IPR declarations filed, deposition scheduled. Sept 2017 – present.

Avila v General Motors, (expert for plaintiff, engaged by Cobin Weiss, LLP.) Wrongful death, product defect - , transmission interlock. Complaint filing in progress, possible class action status, March 2018 – present.

Faraday Future, Inc. v. EVelozcity, Inc. (expert for plaintiff, engaged by Quinn Emanuel Urquhart & Sullivan, LLP.) Corporate theft of electric vehicle trade secrets. Case status indefinite following departure of CEO and financial issues with Faraday Future. April – September 2018.

Ivey v Volkswagen AG. (expert for plaintiff, engaged by Anapolweiss LLC). Product defect/liability SRS failure to deploy resulting in fatality. In discovery and deposition phases, June 2018 – present.

Fitzmaurice v Polaris Industries, Inc. (expert for plaintiff, engaged by Anapolweiss LLC). Product defect resulting in fatalities, involving vehicle control and active safety systems of off-road vehicle. Unknown resolution. November. 2018 – November 2019.

Continental Automotive GmbH v. Atmel Corp. USA and Atmel Sari Switzerland, (expert for defense, engaged by Arnold & Porter Kaye Scholer LLP.) Alleged product defect, airbag control modules used by co-litigants Daimler, Volkswagen, Honda, Fiat Chrysler, Volvo, and Hyundai, causing failure to deploy or inadvertent deployment of airbags. January 2019 – present.

Oribital Engine Company Pty Ltd. v Robert Bosch LLC and Daimler AG, (expert for defendant Robert Bosch). IPR and infringement defense against asserted patent related to electronic throttle control method and mechanism. Case settled favorably to client prior to formal proceedings. August 2019 – December 2019.

Volkswagen AG v Michigan Motor Technology (expert for plaintiff, engaged by Sterne, Kessler, Goldstein & Fox PLLC.) IPR invalidation of four automotive electronics and controls patents asserted against VW AG. Infringement suits withdrawn by plaintiff in exchange for withdrawal of IPRs. November 2019 – November 2022.

Bishop v Electronic Mobility Controls Inc. (expert for plaintiff Randy Bishop, engaged by Swope Rodente LLP). Product liability case, failure of adaptive driving control system for quadriplegic operator leading to major accident. Case settled favorably, terms not disclosed. May 2020 – October 2020.

ASA Electronics LLC v Lippert Components Inc. (expert for defense, engaged by Faegre Drinker Biddle & Reath LLP. Alleged theft of intellectual property, automation and remote control electronics for recreational vehicles. Unknown resolution. June 2020 – December 2021.

Remy McCarthy et al v Toyota Motor Corp et al. (Class action case, expert for plaintiff, engaged by Fazio Micheletti LLP). Product defect, hybrid drive power electronics. Settled favorably for class we represented. https://www.carcomplaints.com/news/2022/toyota-prius-inverter-failure-lawsuit-settlement-reached.shtml July 2020 – February 2022

Continental Automotive GmbH v Horizon Global (for Horizon). Primary contact Matthew Cavanagh, McDonald Hopkins, 300 N. LaSalle St. Suite 1400, Chicago, IL 60654. econway@mcdonaldhopkins.com, 312.642.6733. Defense against three IPRs asserted by Continental in response to infringement suit by Continental; Electronic trailer brake controls. Unknown resolution. January 2020 – July 2021.

Electrojet Inc. v Magneto Marelli SPA. (for Marelli). Howard and Howard, LLC. Alleged theft of intellectual property, electronic fuel injection. American Arbitration Assoc. Case No. 01-20-0003-9607. May 2021 – June 2022. Case settled favorably for the client.

Unicorn Energy GmbH v Tesla Motors, Inc. (for Tesla). Cooley, LLP. transferred to Fish & Richardson LLC February 2022. Allegation of patent infringement, advanced battery management systems. Case No. 2:20-cv-00338, E.D. Texas. June 2021 – October 2022. Unknown status.

Cervantes v Britax Inc. (for Cervantes). Coben Law, LLP. Product liability, appeal for class action. Electronic safety features of automobile child safety seat. Advised client of inadequate grounds for lawsuit. Services subsequently terminated. May 2021 – April 2022.

Sweet v Polaris Inc. (for Sweet). Coben Law, LLP. Product liability, engine control system safety issues in Utility Terrain Vehicles. Unknown resolution. May 2021 – April 2022.

Karma Automotive v. Lordstown Motor Co., (for Lordstown). Baker Hostettler LLP. Accusation of theft of trade secrets relating to vehicle infotainment and communications systems. Completed analysis report. Case in progress, unknown status.

Charge Fusion Technologies, LLC v. Tesla, Inc. (for Tesla). Arnold Porter LLC. Contact: Nicholas Lee (nicholas.lee@arnoldporter.com). Patent infringement accusation related to electric vehicle charging and communications systems. May 2022-ongoing.

Michigan Motor Technologies, LLC v. Mercedes-Benz USA, LLC. (for Mercedes) Emanuel Quinn, LLP. IPR seeking to invalidate MMT-asserted patent related to Engine Torque Controller for Direct Injection Engine. Contact: Chandler Matz. Petition and expert declaration submitted. May 2023.

5 active clients, not listed here in compliance with nondisclosure provisions of engagement agreements; Available upon request with client's permission.