

QADEER AHMED

Assistant Professor (Tenure Track), <https://mae.osu.edu/people/ahmed.358>

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RESEARCH INTEREST

Controls and Optimization, Optimal Control, Machine Learning, Health Monitoring, Safety and Cybersecurity, Smart Powertrain, Connected and Autonomous Vehicles.

POSITIONS HELD:

Assistant Professor, (Tenure Track) **Sep 2022- Present**

Department of Mechanical and Aerospace Engineering, The Ohio State University.

Department of Electrical and Computer Engineering, The Ohio State University (By Courtesy)

Department of Integrated Systems Engineering, The Ohio State University (By Courtesy)

Center for Automotive Research, The Ohio State University (Fellow)

Associate Professor of Research **Sep 2019-Aug 2022**

Department of Mechanical and Aerospace Engineering, The Ohio State University.

Department of Electrical and Computer Engineering, The Ohio State University (By Courtesy)

Research Scientist **Oct 2016- Aug 2019**

Center for Automotive Research, The Ohio State University

Senior Research Associate **Jan 2015 – Sep 2016**

Center for Automotive Research, The Ohio State University

Research Associate and Post-Doctoral Researcher **Jan 2012 – Dec 2014**

Center for Automotive Research, The Ohio State University

EDUCATION

Doctor of Philosophy [With Distinction] in Electronic Engineering **October 2011**
(Major: Control Systems)

Muhammad Ali Jinnah University, Islamabad, Pakistan.

Thesis Title: Fault Diagnosis Methodologies for Automotive Engine Air Intake Path

Advisor: Prof. Aamer I. Bhatti.

Master of Science [With Distinction] in Electronic Engineering
(Major: Control Systems) **June 2009**

Muhammad Ali Jinnah University, Islamabad, Pakistan.

Thesis Title: Robust Control Algorithms for Twin Rotor System

Advisor: Prof. Aamer I. Bhatti.

Bachelor of Science [With Hons] in Mechatronics & Control Engineering **December 2006**

University of Engineering & Technology, Lahore, Pakistan.

RESEARCH OUTCOMES:

8 Provisional Patents, 11 Invention Disclosures

34 Journal articles; 86 Conference proceedings and 1 Monograph (See the attached document for list)

Google Scholar: 1082 Citations and 18 H-Index

RESEARCH FUNDING:

Secured \$7.4M for research expenses from US DOE, US DOT, NHTSA, Cummins, PACCAR, Daimler Trucks of North America (DTNA), Honda, Ohio Department of Higher Education, OSU internal grants, Ford Motor Company, General Motors, and SAE. This funding includes ~\$200,000 for lab equipment.

LEADERSHIP:

Leading a team of 25+ members on multiple research projects, including a student project, OSU's Auto Drive Challenge (ADC) II. ADC II has a team of five professors and students from multiple departments: Led editorial activities for IFAC AAC 2022.

TEACHING EXPERIENCE

- ME7372 Fault Diagnosis in Dynamic Systems Autumn 2022.
- ME2850 Numerical Methods in Spring 2021- class of 160 undergraduate students.
- ME2040 Statics and Mechanics of Materials in Spring 2019 - class of 94 undergraduate students.
- ME2040 Statics and Mechanics of Materials in Autumn 2018 - class of 145 undergraduate students.
- ECE3551 Introduction to Feedback Control Systems in Spring 2018 - class of 49 undergraduate students.
- 3 Lectures in ME8372, Fault Diagnosis in Dynamic Systems, taught by Prof. Giorgio Rizzoni in 2017
- 1 lecture in ECE 3551 Introduction to Feedback Control Systems, taught by Prof. Vadim Utkin in 2017
- Assisted Prof. Giorgio Rizzoni in preparing lecture presentations, exams, and assignments for ME 8372 Fault diagnostics of dynamical systems in 2014
- Developed MATLAB/Simulink based simulator platform as part of course work on Modeling and Control of HEV for Stuttgart International Summer School on Mobility in 2013.
- Designed, Developed & Conducted Control Engineering Lab Course in M. A. Jinnah University in 2009

SCHOLARSHIP AND AWARDS

- Ralph R. Teetor Educational Award by Society of Automotive Engineering (SAE), 2023
- Forest R. McFarland Award by Society of Automotive Engineering (SAE), 2022
- L. Ray Buckendale Award by Society of Automotive Engineering (SAE), 2019
- Lumley Research Award by OSU College of Engineering, 2018
- Best Young Scientist 2012 declared by the Pakistan Science Foundation and National Academy of Young Scientist.
- M. A. Jinnah University, Islamabad Postgraduate scholarship (2009-2011).
- M. A. Jinnah University, Islamabad, Deans Role of Honor, 2009.
- Selected for Young Author support program, IFAC, World Congress, 2008, Seoul, Korea.
- Selected for Student support award, Conference of Control Application, 2009 St. Petersburg, Russia.
- Talent Scholarship at University of Engineering & Technology Lahore, 2003.
- 3rd Position (among 6000 candidates approx.) in Matriculation Board Exam, 2000.

RESEARCH GRANTS AND SPONSORED PROGRAMS:

	Funding
Since 2016, I have been awarded 30 research projects as PI/co-PI with total funding of \$7.4 Million+	
1. US DOE (2023-25): Optimized Low Carbon Fuel Range Extender for off road vehicle. Project Partners: Cummins (Lead), OSU, NREL OSU PIs: Qadeer Ahmed, Co-PI: Athar Hanif	\$313,000
2. USDOT UTC- CARMEN+ (2023-28): Center for Automated Vehicles Research with Multimodal Assured Navigation Project Partners: OSU, UC Irvine, UT Austin, OSU PI: Zak Kassas OSU co-PI: Qadeer Ahmed	\$600,000
3. Daimler Truck of North America and OSU Sustainability Institute (2022-23): Battery load management in fleet of electric school buses	\$125,000
4. ODHE (2023)- Ohio Cyber Range Institute Regional Programming Center Collaboration Ecosystem	\$45,000
5. NHTSA (2022-23): Preventive maintenance techniques for ADS vehicle safety OSU PI: Qadeer Ahmed	\$ 116,484
6. Cummins Inc. (2023): Multivehicle heterogeneous fleet and infrastructure optimization framework	\$224,863

	OSU PI: Qadeer Ahmed	
7.	US DOE SuperTruck III (2022-26): Development and Demonstration of Zero-Emission Technologies for Commercial Fleets Project Partners: PACCAR (Lead), OSU, ANL, Charge Point, Meritor, Uni. North Texas, LG Energy Solution and Schneider Electric. OSU PIs: Qadeer Ahmed, Co-PI: Chris Atkinson.	\$952,217
8.	ODHE RAPIDS (2021-22): Hardware-in-loop testing for vehicle cybersecurity and safety. OSU PI: Yannis Korkolis, Co-PI: Qadeer Ahmed	\$49,000
9.	OSU's President's Research Excellence Accelerator Grant (2021-22): Energy Efficient On-Demand Delivery Services (EODS) OSU PI: Qadeer Ahmed, Co-PI: Christopher Atkinson and Desheng Liu	\$50,000
10.	Cummins Inc (2021-25): Secure distributed control systems (SDCS) for electrified commercial vehicles OSU PI: Qadeer Ahmed, OSU co-PI: Anish Arora and Zhiqiang Lin	\$1,285,728
11.	GM/SAE (2021-26): Auto Drive Challenge II Lead OSU Advisor: Qadeer Ahmed, co-Advisors: Lisa Fiorentini, Harry Chao	\$750,000
12.	Cummins Inc (2021-22): Integrated systems and controls development of advanced connected and autonomous powertrains OSU PI: Qadeer Ahmed	\$420,000
13.	USDOE (2020-22): Co-optimization of Vehicle and Routes (CoVAR) to improve commercial transportation system efficiency Project Partners: PACCAR, NREL, Valence, AWS OSU PI: Qadeer Ahmed	\$306,000
14.	USDOT UTC- CARMEN (2020-22): Center for Automated Vehicles Research with Multimodal Assured Navigation Project Partners: OSU, UC Irvine, UT Austin, Uni. Of Cincinnati. PI: Zak Kassas OSU co-PI: Qadeer Ahmed	\$120,000
15.	OSU CAR Industrial Consortium project (2020-21): Development of mobility cyberrange OSU PI: Qadeer Ahmed	\$40,000
16.	OSU CAR Industrial Consortium project (2021-22): Position, Navigation and Timing security in connected and autonomous vehicles. OSU PI: Qadeer Ahmed	\$40,000
17.	Honda R&D Americas (2019-21): Security Assurance for Vehicular Systems- OSU PI: Qadeer Ahmed	\$343,529
18.	DOE SuperTruck II, PACCAR Inc. (2020-23): Predictive Powertrain Control for Optimal Fuel Loads Management in a Mild Hybrid Line Haul Truck OSU PI: Qadeer Ahmed	\$475,267
19.	ODHE Ohio Third Frontier (2020-21): Ohio Cybersecurity Initiative for Mobility and Manufacturing (OCIMM) OSU PI: Eylem Ekici, Co-PI: Qadeer Ahmed	\$409,000
20.	ODHE RAPIDS (2020-21): Autonomous Vehicle Cybersecurity Platform (AVCP) for OSU Cyber Range OSU PI: Theodore T. Allen, Co-PI: Qadeer Ahmed	\$96,000
21.	NHTSA-VRTC (2019-22): Develop a metric to measure the improvement in vehicle cybersecurity	\$470,000

	OSU PI: Qadeer Ahmed	
22.	Cummins Inc (2019-20): Dynamic Powertrain Controls Optimization with Applications to Electrified Commercial Vehicles OSU PI: Qadeer Ahmed	\$400,000
23.	Cummins Inc (2018-19): Spatial constrained Powertrain Control of PHEV for EV Geo-fencing and Cybersecurity Issues in advance vehicle controllers OSU PI: Qadeer Ahmed, OSU co-PI: Giorgio Rizzoni	\$93,000
24.	OSU CAR Industrial Consortium project (2018-19): Integrated Vehicle Health Monitoring for Safety and Security (IVMSS) OSU PI: Qadeer Ahmed	\$50,000
25.	Ford Motor Company (2017-18): Model-based Fault Diagnosis of Automatic Transmission Systems using Structural Analysis OSU PI: Qadeer Ahmed, OSU co-PI: Giorgio Rizzoni	\$190,000
26.	US DOE (2016-21): U.S.-China Clean Energy Research Center (CERC) Truck Research Utilizing Collaborative Knowledge (TRUCK); Project Partners: ANL, Cummins Inc., FCCC, OSU, ORNL, Purdue Uni., and Uni. of Michigan; OSU PIs: Giorgio Rizzoni, Marcello Canova and Qadeer Ahmed	\$2,000,000
27.	Parker Hannifin Inc. (2016-18): Fault Diagnosis and Cost Optimization of Parker Fluid Systems using “Connected” Sensors; OSU PI: Giorgio Rizzoni, OSU co-PI: Greg Busch and Qadeer Ahmed.	\$500,000
28.	US DOE (2016-19): Electric Truck with Range Extending Engine (ETREE); Project Partners: Cummins Inc., PACCAR Inc., OSU, ANL and NREL; OSU PI: Giorgio Rizzoni, OSU co-PI: Qadeer Ahmed	\$429,972
29.	Ford Motor Company (2016-17): Model-based Functional Safety Analysis of the HEV MHT Torque Monitor Subsystem; OSU PI: Giorgio Rizzoni, OSU co-PI: Qadeer Ahmed	\$180,000
30.	Cummins Inc. (2016-17)- Optimal look-ahead energy management scheme for an on-highway HEV; OSU PI: Giorgio Rizzoni, OSU co-PI: Qadeer Ahmed.	\$450,000
31.	Ford Motor Company (2015-16)- Applying Structured Analysis to 10R Transmission; OSU PI: Giorgio Rizzoni, OSU co-PI: Qadeer Ahmed	\$49,000

Project Manager/Team Member:

1.	Ford Motor Company (2018-19): AV Test Driver - Active Diagnosis for Mechanical Faults OSU Team: Giorgio Rizzoni (PI), Qadeer Ahmed	\$180,000
2.	Parker Hannifin Inc. (2015-16): Modeling optimization and health monitoring of a Parker TransAir system. OSU Team: Giorgio Rizzoni (PI), Greg Busch (co-PI), Qadeer Ahmed	\$245,000
3.	Cummins Inc. (2015-16): Model and algorithm development for control and optimizations of energy management in HEVs in Modelica Programming Language OSU Team: Giorgio Rizzoni (PI), Qadeer Ahmed	\$65,000
4.	Cummins Inc. (2014-15): Model and algorithm development for control and optimization of energy management in HEVs OSU Team: Giorgio Rizzoni (PI), Qadeer Ahmed	\$450,000

5. US- DOE (2012-16): U.S.-China Clean Energy Research Center (CERC) (Thrust area: Vehicle Electrification) Consortium \$1,000,000
OSU Team: Giorgio Rizzoni (PI), Qadeer Ahmed (2012-14)
6. NSF GOALI (2013-16): Aging propagation and model-based prognosis for inter-connected systems \$250,000
OSU Team: Giorgio Rizzoni (PI), Wei Zhang (co-PI), Qadeer Ahmed
7. Sandia Labs (2012): Conceptual design development of an advanced semi-trailer dual redundant hybrid electrical power system. \$25,000
OSU Team: Yann Guezennec (PI), Qadeer Ahmed
8. ICT R&D Fund Pakistan (2009-2011)- Early Fault Warning in Automotive Systems PKR 15.4M
Project Team: Aamer Iqbal Bhatti (PI), Qadeer Ahmed
9. 2009: Obstacle Avoiding Robot Control
10. 2008: Stewart Platform modeling and control
11. 2007: Stabilized platform modeling and control

Grant Proposal Preparation and Submission

Actively participated in successful several grants proposal preparation submitted to: US Department of Energy, US Department of Transportation, National Science Foundation, USAID, Automotive OEMs, and Tier 1 suppliers.

STUDENTS COMPETITION

2nd Position in SAE/GM AutoDrive Challenge 2021-22

2nd position in Solutions Report at SAE Mobility Forward Challenge: AI Mini-Challenge 2021.

PRESENTATIONS, SEMINARS AND PANEL DISCUSSION

1. Invited Talk: Safety & Security in Highly Automated & Connected Automotive Systems “Reimagine The Playing Field” 2022 Annual Meeting Of ITS Midwest.
2. Invited talk: Hunting the Energy Optimal Fleet Composition TRB’s Sustainability and Emerging Transportation Technology (SETT) Conference 2022.
3. Invited Talk: Safety & Security in Highly Automated & Connected Automotive Systems 2022 Automotive IQ’s Implementation of ISO26262 and SOTIF
4. Model-based gateway intrusion detection system invited lighting talk at Workshop on Future Automotive Research Datasets 2021.
5. Is vehicle cybersecurity a real concern? At invited talk at Cyber Program Manager, Ohio Homeland Security 2021.
6. Mobility Cyber Range- Lighting talk during Galois Balloween Workshop, October 2021.
7. Smart off-road powertrains- Panel moderator at SAE COMVEC 2021.
8. Safety and Security by Design: Online Seminar at GM R&D Vehicle Health Management group, September 2021.
9. Energy optimal fleet selection, Seminar at Capital University of Science and Technology, Islamabad, Pakistan, July 2021.
10. Reinventing the wheels in the age of ML/AI in 46th Intl. Nathiagali Summer College, Pakistan Islamabad, July 2021.
11. Re-inventing the Wheels for safety and security; International symposium on Recent advances In electrical engineering and computer sciences, October 22, 2020.
12. Reinventing the wheels- Efficiency, performance and safety in modern vehicles- Webinar at COMSATS Lahore, Energy Center, July, 20 2020.

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13. Assessing Vehicle Cyber Resiliency, Panel Moderator at SAE / NHTSA Government/Industry Cybersecurity Workshop 2020.
 14. Even Your Vehicle Can Be Hacked, talk at OSU Cybersecurity Days, Oct 28th, 2019.
 15. Challenges in Modern Automotive systems, seminar at OSU Marion Campus on Nov 28th, 2018.
 16. Diagnostics in Advanced Automatic Transmissions, seminar at Center for Automotive Research OSU, April 17, 2018.
 17. Automotive Engineers are cool, talk with 2nd graders at Alpine Elementary School, April 5, 2018.
 18. Is Engineering An exciting career? seminar for 8th graders at Sunrise academy Dec 15, 2017.
 19. Advance diagnostics in Modern Automatic transmission, part of workshop on "Fault Diagnosis in Complex Systems Using Structural Analysis, and Application to Automotive Functional Safety" at 1st IEEE Conference on Control Technology and Applications, Hawaii, US, 2017.
 20. Modeling and Control of Dual Mechanical Port based Hybrid Electric Vehicle Powertrain, presentation at CERC annual conference at University of Michigan, August 2014.
 21. Modeling and Control of Hybrid Electric Vehicle Powertrain, Presentation at Symposium on Recent Advances in Control Engineering held by IEEE CSS Pakistan chapter. 23rd April 2014
 22. Structural analysis based FDI for dynamical system, seminar on 29th April 2014 at IEEE CSS Pakistan chapter group meeting held at Muhammad Ali Jinnah University, Islamabad, Pakistan.
 23. Sustainable mobility and The Future of Transportation, seminar at Pakistan Institute of engineering & Applied Sciences and Capital University Science & Technology Islamabad, Pakistan, Sept. 2012.

PROFESSIONAL SOCIETIES

1. IEEE Senior Member promotion 2021
2. Member IEEE and IEEE Control System Society (CSS)
3. Member Society of Automotive Engineer (SAE)
4. Member of ASME DSCD Technical Committee (TC) on Automotive and Transport Systems (ATS).
5. Member of International Federation of Automatic Control (IFAC) TC on Automotive Control.
6. Member of IEEE CSS technical committee on Automotive Control.

SUPERVISION AND MENTORING OF STUDENTS (* Diversity students)

PhD Graduate Students

- 2018- Pradeep Oruganti Sharma (ME) [Post Candidacy]
2019- Hamza Anwar (ECE) [Post Candidacy]
2020- Sharika Kumar* (ECE) [Post Qualifier]
2021- Vishnu Renganathan (ECE) [Post Qualifier]
2021- Qazi Mairaj-ud-din (ECE) [Post Qualifier]
2022- Joon Moon (ISE) [Post Qualifier]
2022- Muhammad Waleed Khan (ME)
2022- Ahmad Hussain Safder (ME)

Co-Advised PhD Students at The Ohio State University with Prof. G. Rizzoni

- 2014-18 Dr. Bharat Hedge (ME) [Employed by General Motors]
2015-19 Dr. Brian Rehman (ME) [Employed by TaylorMade Golf Company]
2016-20 Dr. Mukilan Arasu (ME) [Employed by MathWorks Inc.]
2016-20 Dr. Tianpei Li (ME) [Employed by SERES EV]

Co-advised PhD Students at Capital University of Science & Technology with Prof. A. I. Bhatti

- 2013-17 Dr. Ahmed Yar (EE) [Federal Government Employee in Pakistan]
2013-17 Dr. Ghulam Murtaza (EE) [Federal Government Employee in Pakistan]
2014-18 Dr. Athar Hanif (EE) [Senior Research Associate at OSU, CAR]
2015-19 Dr. Raheel Anjum (EE)[Federal Government Employee in Pakistan]

Master Graduate Students

2017-18 Xuchen Li (ME) [Left for job in China]
2018-20 Eeshan V Deosthale [Employed by Motional]
2019-20 Matt Appel (ECE) [Employed by Battelle lab]
2019-20 Sahib Multani (ME) [Employed by Cummins Inc.]
2020-21 Aashrith Vishnawath (ECE) [Employed by Cummins Inc.]
2020-21 Somendra Pratap Singh (ME) [Employed by Rivian]
2020-21 Harish Ramayee [(ECE)Employed by Blackshark.ai]
2020-21 Derek (Chengwei) Duan (ECE) [PhD student at Uni. of Florida]
2021- 22 Satvik Khuntia (ME) [Employed by PACCAR Inc.]
2021- 22 Anisha Karthyedath*(ECE) [Employed by Honda Motors]
2021-22 Ying Huang (ECE) [Employed by Cummins Inc.]
2021-22 Jincheng He (ECE)
2021-22 Muhammad Qaisar Fahim (ME) [Employed by Cummins Inc.]
2022- Akarsh Mohan Konaje (ECE)
2021- Sandeep Sulake (ME)
2022-23 Rohit Sanket (ECE) [Employed by Lucid Motors]
2023- Nuruddin Javed (ECE)
2023- Shreyansh Anil (ME)

Co-Advised MS Students at The Ohio State University with Prof. G. Rizzoni

2014-15 Chris Stanislovaitis (ME) [Employed by Ford Motor Company]
2015-16 Avinash Divecha (ME) [Employed by Cummins Inc.]
2016-17 Avinash V. Rajendra (ME) [Employed by Cummins Inc.]
2018-19 Vijay Anil (ME) [Employed by Cummins Inc.]
2021- Javier Fernandez* (ME)

Postdocs

2017-18 Daniel Jung
2018-19 Athar Hanif
2021-22 Manfredi Villani
2022- Sidra G. Bhatti

Research Assistant (Post MS)

2020- Sharat Hegde
2021- Rahan Khan

Visiting Scholars

2013 Michele Barbieri, University of Rome Tor Vergata, Italy
2014 Dr. Qi Chen, Hefei University of Technology, China
2014 Zhengtong Liu, Beijing Ins. Of Tech
2015 Dr. Xuemin Li, Harbin Engineering Institute, China
2016 Dr. Changquig Du, Wuhan University, China
2014 Rongcong Xu, Beijing Ins. Of Tech.
2014 Minghui Zhang*, Xi'an university of technology, China
2015 Chunyan Guo, Xi'an university of technology, China
2017 Dr. Hu Jei, Wuhan University, China
2018 Mingje Zhao*, Beijing Ins. Of Tech

Undergraduate Students:

2013 Chris Stanislovaitis (Advisor G. Rizzoni)
2013 Xianpai Zeng (Advisor G. Rizzoni)
2017 Xieyuan Zhang (Advisor G. Rizzoni)

2017 Anthony Jackson*

High School Student

2021- Maggan Sheikh*- Columbus State Community College, Columbus, OH

2020- Gabriel Buller- SAR High School, New York City, NY

2019- Maxwell Pace*- Metro High School, Columbus, OH

PROFESSIONAL SERVICES

Award nomination Evaluation Committee

Member of Forest R. McFarland Award nominations evaluation committee.

Journal Editorial Board Member

Associate Editor- IEEE Transactions on Transportation Electrification.

Technical Editor- IEEE/ASME Transactions on Mechatronics.

Conference Editorial Board Member

Technical Program Committee Symposium on Vehicle Security and Privacy (VehicleSec 2023)

Editor for IFAC Advances in Automotive Control 2022

Associate Editor for Conference on Decision and Control (CDC) 2019- present.

Associate Editor for IEEE Conference on Control Technology and Applications (CCTA), 2018-.

Associate Editor for American Control Conference 2016-present

Associate Editor for ASME Dynamic Systems and Control Conference (DSCC), 2015, 2016, 2017.

Associate Editor for IFAC Advances in Automotive Control 2016.

Associate Editor for IFAC Workshop on Engine and Powertrain Control, Simulation and Modeling (ECOSM), 2015, 2018.

Associate Editor for Chinese Control Conference 2018.

Technical Committee Member for ICCEREC 2017, ICET 2017, International Congress on Ultra-Modern Control Systems 2010, 2011. International Congress on Ultra-Modern Control Systems 2010, 2011.

Conference organization

Panel organizer and moderator in COMVEC 2020, 2021, 2022

Member of ASME DSCC 2015 conference management team

Member of SAE World Congress 2019-21 conference organizing team- PFL sessions on HEV/EV

Member of SAE COMVEC 2020 conference organizing team

Special Sessions:

ACC 2018- "Challenges in Advanced diagnostics of complex industrial systems"

Invited Sessions:

Organizing invited sessions with ASME DSCD Automotive and Transportation Systems Technical Committee and IEEE CSS Automotive Control Technical committee since 2016.

ASME DSCC 2016- 'Modeling and Control of Internal Combustion Engines'.

ASME DSCC 2017- 'Modeling and Estimation for Vehicle Safety and Integrity'.

AMSE DSCC 2018- 'Modeling and Control of IC Engines and Powertrain Systems'

ACC 2016- 'Energy Storage and Hybrid Electric Vehicle Controls' and 'Advanced Ground Vehicle Estimation and Control Algorithms'.

ACC 2017- 'Electrochemical Modeling and Diagnostics of Li-ion Batteries'

ACC 2018- 'Control of Engine Breathing; Advances in Control of the Air-Path for Internal Combustion Engines' and 'Energy/Fuel Efficient Powertrains'.

ACC 2020- 'Safety and Security of Automotive systems'

CCTA 2017- 'Vehicle Dynamics Modeling and Control', 'Modeling, Control and Optimization of Powertrain Systems' and 'Connected and Autonomous Vehicles'.

CCTA 2018/19- 'Control and Diagnostics of Powertrains and Vehicle Dynamics'

Reviewer Services

- **Book Publishers:** Elsevier, Springer, Wiley Publishers, iConcept Press
- **Journals:** IEEE T. on Cntrl Sys. Tech.; Automatica; IEEE T. on Ind. Elec.; Int. J. of Heavy Veh. Sys.; SAE Int. J. of Commercial Vehicles; Cntrl Engg. Practice; J. of Process Cntrl, IEEE T. on Mechatronics; Int. J. of Adaptive Control and Signal Processing; IEEE Control Systems Letters; IEEE Access;
- **Conference:** ASME DSCC, IFAC ECOSM, ACC, IFAC AAC, IFAC Safeprocess, SAE World Congress, IFAC World Congress, ECC,
- **Proposals:** ARO, ORNL, US DOE Small business ventures, Ontario Research Fund, OSU Big Data Funding,
- **Miscellaneous:** Super build by Smithsonian Institute, Undergraduate project judge at OSU college of engineering 2015

PUBLICATIONS

Scopus: Citations 857 and H-Index:15

Google Scholar: 1082 Citations and H-Index:18

ISI Web of Science: Citations: 558 and H-Index: 12

Journal Publications

- J38 H. M. Y. Naeem, A. I. Bhatti, Y. A. Butt and **Q. Ahmed** Energy Economization using Connectivity-based eco-Routing and Driving for Fleet of Battery Electric Vehicles in IEEE Transactions of Transportation Electrification, 2023.
- J37 H. Anwar, A. Vishwanath, A. Chunodkar, **Q. Ahmed** Comprehensive Energy Footprint Benchmarking of Commercial Electrified Powertrains, accepted in Applied Energy 2023.
- J36 H. M. Y. Naeem, A. I. Bhatti, Y. A. Butt and **Q. Ahmed** Optimal Control based Eco-driving Solution for Connected Battery Electric Vehicle on a signalized Route, in Automotive Innovation, 2023.
- J35 P. S. Oruganti, P. Naghizadeh, **Q. Ahmed** The Impact of Network Design Interventions on the Security of Interdependent Systems in IEEE Transactions on Control of Network Systems in 2023.
- J34 M. Q. Fahim, H. Anwar, M. Villani, **Q. Ahmed**, K. Ramakrishnan Co-optimization of Design and Control of Energy Efficient Hybrid Electric Vehicles Using Coordination Schemes, ASME. J. Dyn. Sys., Meas., Control. 2022
- J33 S. P. Singh, A. Hanif, **Q. Ahmed**, M. Meijer, J. Lahti, Optimal Management of Electric Hotel Loads in Mild Hybrid Heavy Duty Truck, Applied Energy, 2022.
- J32 B. Hegde, **Q. Ahmed**, G. Rizzoni, Energy Saving Analysis in Electrified Powertrain using Look-Ahead Energy Management Scheme, Applied Energy, 2022.
- J31 V. Renganathan, E. Yurtsever, **Q. Ahmed**, and A. Yener. "Valet Attack on Privacy: a Cybersecurity Threat in Automotive Bluetooth Infotainment Systems." Cybersecurity, 2022.
- J30 R. Anjum, A. Yar, M. Kiani, A.I. Bhatti, **Q. Ahmed**, Fault Tolerant Speed Tracking Control of Gasoline Engine using First Principle based Engine Model, in Journal of Control and Decision, 2022
- J29 H. M. Y. Naeem, A. I. Bhatti, Y. A. Butt, and **Q. Ahmed**. Eco-Driving Control of Electric Vehicle with Battery Dynamic Model and Multiple Traffic Signals. Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering, (August 2021).
- J28 E. Deosthale, D. Jung, **Q. Ahmed**, Discrete Fault Diagnosis of Structurally Reconfigurable Systems. ASME. J. Dyn. Sys., Meas., Control. October 2021; 143(10): 101009.
- J27 V. Anil, T. Zhao, T., M. Zhao, M. Villani, **Q. Ahmed**, G. Rizzoni, Powertrain Design Optimization for a Range-Extended Electric Pickup and Delivery Truck, SAE Int. J. Commer. Veh. 13(3):189-203, 2020.
- J26 R. Anjum, A. Yar, G. Murtaza, **Q. Ahmed**, and A. I. Bhatti, Model-Based Unified Framework for Detection and Mitigation of Cyclic Torque Imbalance in a Gasoline Engine. ASME. J. Eng. Gas Turbines Power. July 2021; 143(7): 071013.
- J25 B. Hegde, **Q. Ahmed**, G. Rizzoni, Velocity and energy trajectory prediction of electrified powertrain for look ahead control, Applied Energy, Volume 279, 115903, 2020.
- J24 A. Hanif, **Q. Ahmed**, A. I. Bhatti, G. Rizzoni, A Unified Control Framework for Traction Machine Drive Using LPV Based Field-oriented Control, ASME Journal of Dynamic Systems, Measurement and Control, Oct 2020, 142(10).
- J23 T. Li, G. Rizzoni, **Q. Ahmed**, J. Meyer, M. Boesch, B. Badreddine 'Model-Based Electric Traction Drive Resolver Fault Diagnosis for Electrified Vehicles' in International Journal of Powertrains, 9:1-2, 59-78. 2020.

- J22 H. Anwar, M. Arasu, and **Q. Ahmed**, "Ensuring Fuel Economy Performance of Commercial Vehicle Fleets Using Blockchain Technology," *SAE Int. J. Adv. & Curr. Prac. in Mobility* 1(4):1510-1516, 2019
- J21 R. Anjum, A. I. Bhatti, A. Yar, **Q. Ahmed**, Cyclic torque imbalance detection in gasoline engines using a uniform second-order sliding mode observer. *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering*, 233(13), 3515–3527. 2019
- J20 Q Chen, W Tian, W Chen, **Q Ahmed**, Y Wu Model-Based Fault Diagnosis of an Anti-Lock Braking System via Structural Analysis, *Special Issue Sensors for Fault Diagnosis and Fault Tolerance*, *Sensors* 18 (12), 4468, 2018
- J19 Q Chen, J Wang, **Q Ahmed**, Design and Evaluation of a Structural Analysis-Based Fault Detection and Identification Scheme for a Hydraulic Torque Converter, *Sensors* 18 (12), 4103
- J18 A. Yar, A. I. Bhatti, **Q. Ahmed** First Principle Based Control Oriented Gasoline Engine Model Including Lumped Cylinder Dynamics *J. Dyn. Sys., Meas., Control* 140(8), 081011, Mar 13, 2018.
- J17 M. Asghar, A.I. Bhatti, G. Murtaza, **Q. Ahmed** Energy Management Strategy for Atkinson Cycle Engine Based Parallel Hybrid Electric Vehicle in *IEEE Access*, vol. 6, pp. 28008-28018, 2018.
- J16 A. Hanif, A. I. Bhatti, **Q. Ahmed** Managing Thermally De-rated Torque of an Electrified Powertrain Through LPV Control," in *IEEE/ASME Trans. on Mechatronics*, vol. 23, no. 1, pp. 364-376, Feb. 2018.
- J15 A. Yar, A. I. Bhatti, **Q. Ahmed** First Principle based Control Oriented Model of Gasoline Engine including Multi-Cylinder Dynamics, In *Control Engineering Practice*, Volume 70, 2018, Pages 63-76.
- J14 G. Murtaza, A. I. Bhatti, **Q. Ahmed** 'Design, Development and Evaluation of a Control Framework for Atkinson Cycle Engine, *ASME. J. Dyn. Sys., Meas., Control* 140(5), 051005 2017;
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