

## QADEER AHMED

Associate Professor of Research  
Departments of Mechanical and Aerospace Engineering, Electrical and Computer  
Engineering, Center for Automotive Research, The Ohio State University,  
930 Kinnear Road, Columbus, OH, 43212.

ahmed.358@osu.edu  
Office: 614-292-0593  
Cell: 614-500-3405

### **RESEARCH INTEREST**

---

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

### **POSITIONS HELD:**

---

<b>Associate Professor of Research</b>	<b>Sep 2019-Present</b>
Department of Mechanical and Aerospace Engineering, The Ohio State University. Department of Electrical and Computer Engineering, The Ohio State University	
<b>Research Scientist</b>	<b>Oct 2016- Aug 2019</b>
Center for Automotive Research, The Ohio State University	
<b>Senior Research Associate</b>	<b>Jan 2015 – Sep 2016</b>
Center for Automotive Research, The Ohio State University	
<b>Research Associate and Post-Doctoral Researcher</b>	<b>Jan 2012 – Dec 2014</b>
Center for Automotive Research, The Ohio State University	
<b>Research Engineer &amp; Research Assistant</b>	<b>Jan 2007 – Dec 2011</b>
Control & Signal Processing Research Group, M. A. Jinnah Univ., Islamabad, PK	

### **EDUCATION**

---

<b>Doctor of Philosophy [With Distinction] in Electronic Engineering (Major: Control Systems)</b>	<b>October 2011</b>
Muhammad Ali Jinnah University, Islamabad, Pakistan. Thesis Title: Fault Diagnosis Methodologies for Automotive Engine Air Intake Path Advisor: Prof. Aamer I. Bhatti.	
<b>Master of Science [With Distinction] in Electronic Engineering (Major: Control Systems)</b>	<b>June 2009</b>
Muhammad Ali Jinnah University, Islamabad, Pakistan. Thesis Title: Robust Control Algorithms for Twin Rotor System Advisor: Prof. Aamer I. Bhatti.	
<b>Bachelor of Science [With Hons] in Mechatronics &amp; Control Engineering</b>	<b>December 2006</b>
University of Engineering & Technology, Lahore, Pakistan.	

### **PUBLICATIONS:**

---

29 Journal articles; 76 Conference proceedings and 1 Monograph (See the attached document for list)  
Scopus: Citations 682 and H-Index:12  
Google Scholar: Citations 869 and H-Index:15  
ISI Web of Science: Citations: 481 and H-Index:11

### **RESEARCH FUNDING:**

---

Secured \$5,909,752 for research expenses from US DOE, US DOT, NHTSA, Cummins, PACCAR, 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 multiple research projects, including student project, OSU's Auto Drive Challenge (ADC) II.  
ADC II has a team of five professors and 20+ students: Leading editorial activities for IFAC AAC 2022.

**TEACHING EXPERIENCE**

---

- Taught ME2850 Numerical Methods in Spring 2021- class of 160 undergraduate students.
- Taught ME2040 Statics and Mechanics of Materials in Spring 2019 - class of 94 undergraduate students.
- Taught ME2040 Statics and Mechanics of Materials in Autumn 2018 - class of 145 undergraduate students.
- Taught 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**

---

- 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 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:**

	<b>Funding</b>
Since 2016, I have been awarded 23 research projects as PI/co-PI with total funding of \$5,909,752	
1. US DOE SuperTruck III (2022-26): Development and Demonstration of Zero-Emission Technologies for Commercial Fleets Project Partners: PACCAR (Lead), OSU, ANL, Charge Point, Ricardo, Meritor, Uni. North Texas, LG Energy Solution and Schneider Electric. OSU PIs: Qadeer Ahmed, Co-PI: Chris Atkinson.	\$952,217
2. ODHE RAPIDS (2021-22): Hardware-in-loop testing for vehicle cybersecurity and safety. OSU PI: Yannis Korkolis, Co-PI: Qadeer Ahmed	\$49,000
3. 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
4. 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	\$985,739
5. GM/SAE (2021-26): Auto Drive Challenge II Lead OSU Advisor: Qadeer Ahmed, co-Advisors: Lisa Fiorentini, Harry Chao	\$750,000

6.	Cummins Inc (2021-22): Integrated systems and controls development of advanced connected and autonomous powertrains OSU PI: Qadeer Ahmed	\$420,000
7.	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
8.	USDOT UTC- CARMEN (2020-22): Center for Automated Vehicles Research with Multimodal Assured Navigation Project Partners: OSU, UC Irvine, UT Austin, Uni. Of Cincinnati. OSU PI: Giorgio Rizzoni, OSU co-PI: Qadeer Ahmed	\$120,000
9.	OSU CAR Industrial Consortium project (2020-21): Development of mobility cyberrange OSU PI: Qadeer Ahmed	\$40,000
10.	OSU CAR Industrial Consortium project (2021-22): Position, Navigation and Timing security in connected and autonomous vehicles. OSU PI: Qadeer Ahmed	\$40,000
11.	Honda R&D Americas (2019-21): Security Assurance for Vehicular Systems- OSU PI: Qadeer Ahmed	\$343,529
12.	DOE SuperTruck II, PACCAR Inc. (2020-23): Predictive Powertrain Control for Optimal Hotel Loads Management in a Mild Hybrid Line Haul Truck OSU PI: Qadeer Ahmed	\$475,267
13.	ODHE Ohio Third Frontier (2020-21): Ohio Cybersecurity Initiative for Mobility and Manufacturing (OCIMM) OSU PI: Eylem Ekici, Co-PI: Qadeer Ahmed	\$409,000
14.	ODHE RAPIDS (2020-21): Autonomous Vehicle Cybersecurity Platform (AVCP) for OSU Cyber Range OSU PI: Theodore T. Allen, Co-PI: Qadeer Ahmed	\$96,000
15.	NHTSA-VRTC (2019-22): Develop a metric to measure the improvement in vehicle cybersecurity OSU PI: Qadeer Ahmed	\$470,000
16.	Cummins Inc (2019-20): Dynamic Powertrain Controls Optimization with Applications to Electrified Commercial Vehicles OSU PI: Qadeer Ahmed	\$400,000
17.	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
18.	OSU CAR Industrial Consortium project (2018-19): Integrated Vehicle Health Monitoring for Safety and Security (IVMSS) OSU PI: Qadeer Ahmed	\$50,000
19.	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
20.	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	\$2,000,000

Michigan;

OSU PIs: Giorgio Rizzoni, Marcello Canova and Qadeer Ahmed

- |     |  |           |
|-----|--|-----------|
| 21. | Parker Hannifin Inc. (2016-18): Fault Diagnosis and Cost Optimization of Parker Fluid Systems using “Connected” Sensors;<br>OSU PI: Giorgio Rizzoni, OSU co-PI: Greg Busch and Qadeer Ahmed. | \$500,000 |
| 22. | US DOE (2016-19): Electric Truck with Range Extending Engine (ETREE);<br>Project Partners: Cummins Inc., PACCAR Inc., OSU, ANL and NREL;<br>OSU PI: Giorgio Rizzoni, OSU co-PI: Qadeer Ahmed | \$429,972 |
| 23. | Ford Motor Company (2016-17): Model-based Functional Safety Analysis of the HEV MHT Torque Monitor Subsystem;<br>OSU PI: Giorgio Rizzoni, OSU co-PI: Qadeer Ahmed                            | \$180,000 |
| 24. | Cummins Inc. (2016-17)- Optimal look-ahead energy management scheme for an on-highway HEV;<br>OSU PI: Giorgio Rizzoni, OSU co-PI: Qadeer Ahmed.  | \$450,000 |
| 25. | Ford Motor Company (2015-16)- Applying Structured Analysis to 10R Transmission;<br>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<br>OSU Team: Giorgio Rizzoni (PI), <b>Qadeer Ahmed</b>   | \$180,000   |
| 2.  | Parker Hannifin Inc. (2015-16): Modeling optimization and health monitoring of a Parker TransAir system.<br>OSU Team: Giorgio Rizzoni (PI), Greg Busch (co-PI), <b>Qadeer Ahmed</b>                        | \$245,000   |
| 3.  | Cummins Inc. (2015-16): Model and algorithm development for control and optimizations of energy management in HEVs in Modelica Programming Language<br>OSU Team: Giorgio Rizzoni (PI), <b>Qadeer Ahmed</b> | \$65,000    |
| 4.  | Cummins Inc. (2014-15): Model and algorithm development for control and optimization of energy management in HEVs<br>OSU Team: Giorgio Rizzoni (PI), <b>Qadeer Ahmed</b>                                   | \$450,000   |
| 5.  | US- DOE (2012-16): U.S.-China Clean Energy Research Center (CERC) (Thrust area: Vehicle Electrification) Consortium<br>OSU Team: Giorgio Rizzoni (PI), <b>Qadeer Ahmed</b> (2012-14)                       | \$1,000,000 |
| 6.  | NSF GOALI (2013-16): Aging propagation and model-based prognosis for inter-connected systems<br>OSU Team: Giorgio Rizzoni (PI), Wei Zhang (co-PI), <b>Qadeer Ahmed</b>                                     | \$250,000   |
| 7.  | Sandia Labs (2012): Conceptual design development of an advanced semi-trailer dual redundant hybrid electrical power system.<br>OSU Team: Yann Guezennec (PI), <b>Qadeer Ahmed</b>                         | \$25,000    |
| 8.  | ICT R&D Fund Pakistan (2009-2011)- Early Fault Warning in Automotive Systems<br>Project Team: Aamer Iqbal Bhatti (PI), <b>Qadeer Ahmed</b>   | PKR 15.4M   |
| 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

---

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

OSU Advisors Team: Andrew Perrault (CSE), Parinaz Naghizadeh (ISE) and Qadeer Ahmed (MAE).

---

### PRESENTATIONS, SEMINARS AND PANEL DISCUSSION

---

1. Model-based gateway intrusion detection system, invited lighting talk at Workshop on Future Automotive Research Datasets 2021.
2. Is vehicle cybersecurity a real concern? At invited talk at Cyber Program Manager, Ohio Homeland Security 2021.
3. Mobility Cyber Range- Lighting talk during Galois Balloween Workshop, October 2021.
4. Smart off-road powertrains- Panel moderator at SAE COMVEC 2021.
5. Safety and Security by Design: Online Seminar at GM R&D Vehicle Health Management group, September 2021.
6. Energy optimal fleet selection, Seminar at Capital University of Science and Technology, Islamabad, Pakistan, July 2021.
7. Reinventing the wheels in the age of ML/AI in 46th Intl. Nathiagali Summer College, Pakistan Islamabad, July 2021.
8. Re-inventing the Wheels for safety and security; International symposium on Recent advances In electrical engineering and computer sciences, October 22, 2020.
9. Reinventing the wheels- Efficiency, performance and safety in modern vehicles- Webinar at COMSATS Lahore, Energy Center, July, 20 2020.
10. Assessing Vehicle Cyber Resiliency, Panel Moderator at SAE / NHTSA Government/Industry Cybersecurity Workshop 2020.
11. Even Your Vehicle Can Be Hacked, talk at OSU Cybersecurity Days, Oct 28<sup>th</sup>, 2019.
12. Challenges in Modern Automotive systems, seminar at OSU Marion Campus on Nov 28<sup>th</sup>, 2018.
13. Diagnostics in Advanced Automatic Transmissions, seminar at Center for Automotive Research OSU, April 17, 2018.
14. Automotive Engineers are cool, talk with 2<sup>nd</sup> graders at Alpine Elementary School, April 5, 2018.
15. Is Engineering An exciting career? seminar for 8<sup>th</sup> graders at Sunrise academy Dec 15, 2017.
16. 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.
17. Modeling and Control of Dual Mechanical Port based Hybrid Electric Vehicle Powertrain, presentation at CERC annual conference at University of Michigan, August 2014.
18. 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
19. 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.
20. 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)
- 2020- Sharika Kumar\* (ECE)
- 2021- Vishnu Renganathan (ECE)
- 2021- Qazi Mairaj-ud-din (ECE)

---

**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 NHTSA]
- 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- Satvik Khuntia (ME)
- 2021- Anisha Karthyedath\*(ECE)
- 2021- Ying Huang (ECE)
- 2021- Jincheng He (ECE)
- 2021- Muhammad Qaisar Fahim (ME)
- 2021- Sandeep Sulake (ME)

---

**Co-Advised PhD 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- Manfredi Villani

**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**

---

#### **Journal Editorial Board Member**

Technical Editor- IEEE/ASME Transactions on Mechatronics.

#### **Conference Editorial Board Member**

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  
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 682 and H-Index:12  
Google Scholar: 860 Citations and H-Index:15  
ISI Web of Science: Citations: 481 and H-Index: 11

### Journal Publications

- 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;

- J13 A. Yar, A. I. Bhatti, **Q. Ahmed** First principle-based control-oriented model for gasoline engine, *ASME. J. Dyn. Sys., Meas., Control.* 2017;139(5):051002-051002-12.
- J12 X. Li, **Q. Ahmed** & G. Rizzoni Nonlinear robust control of marine diesel engine, *Journal of Marine Engineering & Technology*, 16:1, 1-10, 2016.
- J11 Q. Chen, **Q. Ahmed**, G. Rizzoni, Design and Evaluation of Model-based Health Monitoring Scheme for Automated Manual Transmission in *ASME J. Dyn. Sys., Meas., Control* 138(10), 101011, 2016.
- J10 Z. Liu, **Q. Ahmed**, J. Zhang, G. Rizzoni, H. He, Structural analysis-based sensors fault detection and isolation of cylindrical lithium-ion batteries in automotive applications, *Control Engineering Practice*, Volume 52, pp 46-58, July 2016.
- J9 G. Murtaza, A. I. Bhatti, **Q. Ahmed** Control-Oriented Model of Atkinson Cycle Engine with Variable Intake Valve Actuation, *ASME J. Dyn. Sys., Meas., Control* 138(6), 061001, 2016.
- J8 H. M. Khalid, **Q. Ahmed**, J. C-H Peng, G. Rizzoni "Current-Split Estimation in Li-Ion Battery Pack: An Enhanced Weighted Recursive Filter Method," in *Transportation Electrification*, *IEEE Trans. on*, vol.1, no.4, pp.402-412, Dec. 2015
- J7 H. M. Khalid, **Q. Ahmed**, J. C-H Peng, "Health Monitoring of Li-Ion Battery Systems: A Median Expectation Diagnosis Approach (MEDA)," in *Transportation Electrification*, *IEEE Transactions on*, vol.1, no.1, pp.94-105, June 2015
- J6 **Q. Ahmed**, A.I. Bhatti, Q. Khan and M. Raza. Condition Monitoring of Gasoline Engine Air Intake system using Second Order Sliding Modes. Special Issue: Variable Structure Systems in Automotive Applications, *Int. J. of Vehicle Design*, Vol.62, No.2/3/4, pp.312 - 332, 2013
- J5 **Q. Ahmed**, A.I. Bhatti, M. A. Rizvi and M. Raza. Gasoline Engine Air Filter Health Monitoring by Second Order Sliding Modes. *International Journal of Adaptive Control and Signal Processing*, Volume 27, Issue 6, pages 447-461, 2013
- J4 **Q. Ahmed**, A.I. Bhatti, I. A. Taj and K. Ahmed. Hidden Markov Model Based Diagnosis & Prognosis of SI Engine Intake Manifold Leakage. *International Journal of Innovative Computing Information and Control*, Vol 8, No. 7(A), pp. 4661 - 4674, July 2012.
- J3 Q. Khan, A.I. Bhatti, M. Iqbal and **Q. Ahmed**. Dynamic Integral Sliding Mode Control of Uncertain Nonlinear Systems. *International Journal of Innovative Computing Information and Control*, Vol 8, No. 7(A), pp. 4621 - 4633, July 2012.
- J2 **Q. Ahmed** and A.I. Bhatti. Estimating SI engine efficiencies and parameters in second order sliding modes. *IEEE Transactions on Industrial Electronics*, vol.58, no.10, pp.4837-4846, Oct. 2011.
- J1 **Q. Ahmed**, A.I. Bhatti and M. Iqbal. Virtual sensors for automotive engine sensors fault diagnosis in second order sliding modes. *IEEE Sensors Journal*, vol.11, no.9, pp.1832-1840, Sept. 2011.

#### **Research Monograph**

- B1 **Q. Ahmed**, A. I. Bhatti, and S. Iqbal. *Robust Control Algorithms for Twin Rotor System*. Lambert Academic Publishers, ISBN 978-3-8443-8053-8, 2011.

#### **Conference Proceedings**

- C76 P. S. Oruganti, P. Naghizadeh, **Q. Ahmed**, "The Impact of Network Design Interventions on CPS Security" in 60th IEEE Conference on Decision and Control, 2021, Austin, Texas
- C75 M. Villani, A. Shiledar, T. Zhao, C. Lana, D. Le, **Q. Ahmed**, G. Rizzoni, "Optimal energy management strategy for energy efficiency improvement and pollutant emissions mitigation in a range-extender electric vehicle" in SAE 15th International Conference on Engines & Vehicles.

- C74 M. Villani, A. Shiledar, **Q. Ahmed**, G. Rizzoni, "Design of a Hierarchical Energy Management Strategy for a Range-Extender Electric Delivery Truck" in 2021 European Control Conference (ECC), Rotterdam, NL.
- C73 M. Appel, P. Oruganti, **Q. Ahmed**, J. Wilkerson, R. Sekar "A Safety and Security Testbed for Assured Autonomy in Vehicles," SAE Technical Paper 2020-01-1291, 2020
- C72 M. Zhao, T. Zhao, Q. Liu, **Q. Ahmed**, G. Rizzoni On Weighing the Conflicting Cost Functions for Optimal Energy Management of Electrified Powertrain IFAC World Congress, IFAC-V 2020.
- C71 R. Wang, X. Li, **Q. Ahmed**, Z. Wang and X. Ma, "Control Performance Improvement of Engine Speed Controller using Tracking Differentiator in the Crank-angle Domain," 2020 American Control Conference (ACC), Denver, CO, USA, 2020, pp. 3249-3254,
- C70 G. Rizzoni, **Q. Ahmed**, M. Arasu, P. S. Oruganti "Transformational Technologies Reshaping Transportation - An Academia Perspective," SAE Technical Paper 2019-01-2620, 2019,
- C69 M. Arasu, H. Anwar, **Q. Ahmed**, G. Rizzoni, Energy Optimal Routing of a Delivery Vehicle Fleet with Diverse Powertrains. Proceedings of the ASME 2019 Dynamic Systems and Control Conference. Park City, Utah, USA. October 8–11, 2019. V001T08A004. ASME.
- C68 R. Anjum, A. Yar, S. R. Shah, **Q. Ahmed** and A. I. Bhatti, Observer Based Robust Control Design for Mitigation of Cyclic Torque Imbalance in Gasoline Engines, 2019 IEEE Conference on Control Technology and Applications (CCTA), Hong Kong, China, 2019, pp. 160-165.
- C67 H. M. Y. Naeem, A. I. Bhatti, Y. A. Butt and **Q. Ahmed**, "Velocity Profile optimization of an Electric Vehicle (EV) with Battery Constraint Using Pontryagin's Minimum Principle (PMP)," 2019 IEEE Conference on Control Technology and Applications (CCTA), Hong Kong, China, 2019, pp. 750-755.
- C66 R. Wang, X. Li, **Q. Ahmed**, J. Zhang, Y. Liu and X. Ma, "Crank-angle Based Active Disturbance Rejection Control for a Marine Diesel Engine," 2019 American Control Conference (ACC), Philadelphia, PA, USA, 2019, pp. 18-23.
- C65 Y H. M. Yasir Naeem, A. Iqbal Bhatti, Y. A. Butt and **Q. Ahmed**, "Velocity Profile Optimization of an Electric Vehicle with Battery Dynamic Model," 2019 12th Asian Control Conference (ASCC), Kitakyushu-shi, Japan, 2019, pp. 609-614.
- C64 R. Anjum, A. Yar, I. K. Yousufzai, **Q. Ahmed** and A. I. Bhatti, "Second Order Sliding Mode based Speed Tracking Control for Torque Management of Gasoline Engines," 2019 12th Asian Control Conference (ASCC), Kitakyushu-shi, Japan, 2019, pp. 555-560.
- C63 A. I. Bhatti, M. Farhan, U. Zafar and **Q. Ahmed**, "On finding battery age through ground truth-based data driven approach," 2019 12th Asian Control Conference (ASCC), Kitakyushu-shi, Japan, 2019, pp. 1090-1094.
- C62 R. Anjum, A. Yar, I. K. Yousufzai, **Q. Ahmed** and A. I. Bhatti, "Second Order Sliding Mode based Speed Tracking Control for Torque Management of Gasoline Engines," 2019 12th Asian Control Conference (ASCC), Kitakyushu-shi, Japan, 2019, pp. 555-560.
- C61 E. Deosthale, **Q. Ahmed**, G. Rizzoni, M. Mohammed, R. Hathway, A. A. Henning, "Sensor Selection for Selective Clutch Fault Isolation in Automatic Transmissions Based on Degree of Fault Tolerance," SAE Technical Paper 2019-01-0117, 2019,
- C60 M. Appel, **Q. Ahmed**, "Intelligent Vehicle Monitoring for Safety and Security," SAE Technical Paper 2019-01-0129, 2019
- C59 M. Arasu, **Q. Ahmed**, and G. Rizzoni, "Optimizing Battery Cooling System for a Range Extended Electric Truck," SAE Technical Paper 2019-01-0158, 2019.

- C58 A. Yar, R. Anjum, **Q. Ahmed**, and A. I. Bhatti, "A Framework for Model Based Detection of Misfire in a Gasoline Engine with Dynamic Skip Fire," SAE Technical Paper 2019-01-1288, 2019,
- C57 X. Li, **Q. Ahmed**, Y. Rahman, "Improving the Electrified Powertrain Performance based on Retrospective Behaviour of Battery state of charge and engine fuel consumption," IFAC-PapersOnLine, Volume 51, Issue 31, 2018.
- C56 B. Hegde, A. V. Rajendran, **Q. Ahmed**, G. Rizzoni, On quantifying the utility of look-ahead data for energy management, IFAC-PapersOnLine, Volume 51, Issue 31, 2018, Pages 57-62,
- C55 M. Mukilan, **Q. Ahmed**, G. Rizzoni, "Battery Discharge Strategies for Energy Management in Electrified Truck for Pickup and Delivery Application." Proceedings of the ASME 2018 Dynamic Systems and Control Conference. Atlanta, Georgia, USA. September 30–October 3, 2018. V001T09A004. ASME.
- C54 P. S. Oruganti, D. Jung, M. Arasu, **Q. Ahmed**, and G. Rizzoni, "Optimal Energy Management in a Range Extender PHEV Using a Cascaded Dynamic Programming Approach." Proceedings of the ASME 2018 Dynamic Systems and Control Conference. Atlanta, Georgia, USA. September 30–October 3, 2018. V002T27A003. ASME.
- C53 T. Zhao, **Q. Ahmed** and G. Rizzoni, "Influence of Battery Charging Current Limit on the Design of Range Extender Hybrid Electric Trucks," 2018 IEEE Vehicle Power and Propulsion Conference (VPPC), Chicago, IL, 2018, pp. 1-6.
- C52 D. Jung, **Q. Ahmed** Active Fault Management in Autonomous Systems Using Sensitivity Analysis in 10th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes, SAFEPROCESS 2018, Warsaw, Poland.
- C51 R. Anjum, A. Yar, **Q. Ahmed**, A. I. Bhatti "Cyclic Torque Imbalance Detection in Gasoline Engines using Second Order Sliding Mode" in 2018 IEEE Conference on Control Technology and Applications.
- C50 X. Li, **Q. Ahmed** "Retrospective performance-based fuel economy improvement in an electrified powertrain", in 2018 IEEE Conference on Control Technology and Applications
- C49 X. Li, Y. Liu, **Q. Ahmed** Fuzzy Sliding Mode Control for Marine Diesel Engine, in 2018 American Control Conference, Milwaukee, USA, 2018
- C48 D. Jung, **Q. Ahmed**, G. Rizzoni Design Space Exploration for Powertrain Electrification using Gaussian Processes, in 2018 American Control Conference, Milwaukee, USA, 2018
- C47 A. Hanif, **Q. Ahmed**, A. I. Bhatti Compensating the Performance and Loss of Life of an Induction Machine based Electrified Powertrain using Robust LPV Controller, in 2018 American Control Conference, Milwaukee, USA, 2018
- C46 A. Yar, **Q. Ahmed**, C. Hall, A. I. Bhatti Model-based Selective Cylinder Deactivation Strategies in an Inline Four Cylinder Gasoline Engine, in 2018 American Control Conference, Milwaukee, USA, 2018
- C45 E. V. Deosthale, D. Jung, **Q. Ahmed** Sensor Selection for Fault Detection and Isolation in Structurally Reconfigurable Systems in 2018 American Control Conference, Milwaukee, USA, 2018
- C44 E. V. Deosthale, **Q. Ahmed**, M. Arasu, G. Rizzoni, M. Mohammed, R. Hathaway 'Structural Analysis based Sensor Placement for Diagnosis of Clutch Faults in Automatic Transmissions', SAE Technical Paper 2018-01-1357, 2018.
- C43 P. S. Oruganti, **Q. Ahmed**, D. Jung, Effects of Battery Thermal and Auxiliary Dynamics on the Hybridization of a Fuel Cell Vehicle, SAE Technical Paper 2018-01-1311, 2018.
- C42 T. Li, **Q. Ahmed**, G. Rizzoni, M. Boesch, B. Badreddine, Resolver Fault Diagnosis for AWD EV based on Structural Analysis, SAE Technical Paper 2018-01-1354, 2018.

- C41 D. Jung, **Q. Ahmed**, X. Zhang, G. Rizzoni, Mission-based Design Space Exploration for Powertrain Electrification of Series Plugin Hybrid Electric Delivery Truck, SAE Technical Paper 2018-01-1027, 2018.
- C40 T. Li, Q. Ahmed, G. Rizzoni, J. Meyer, M. Boesch and B. Badreddine Motor resolver fault propagation analysis for electrified powertrain in 2017 ASME Dynamic System and Control Conference DSCC2017-5408, pp. V002T19A006; 9 pages.
- C39 A. Hanif, **Q. Ahmed**, A. I. Bhatti, G. Rizzoni, Genetic Algorithms optimized Multi-Objective Controller for an Induction Machine based Electrified Powertrain, 2017 IEEE Conference on Control Technology and Applications (CCTA), Mauna Lani, HI, 2017, pp. 853-858
- C38 G. Murtaza, **Q. Ahmed**, A. I. Bhatti, G. Rizzoni, An Alternate Control Framework Development for Atkinson Cycle Engine using Variable Late Intake Valve, 2017 IEEE Conference on Control Technology and Applications (CCTA), Mauna Lani, HI, 2017, pp. 866-871.
- C37 A. V. Rajendran, B. Hegde, **Q. Ahmed**, G. Rizzoni, Introduction and Development of Traffic-In-Loop Powertrain Simulation, 2017 IEEE Conference on Control Technology and Applications (CCTA), Mauna Lani, HI, 2017, pp. 261-266.
- C36 G. Murtaza, A. I. Bhatti, **Q. Ahmed**, A. Arshad; Nonlinear Robust Control of Atkinson Cycle Engine, in IFAC-PapersOnLine, Volume 50, Issue 1, 2017, Pages 3685-3690,
- C35 B. Rahman, G. Busch, **Q. Ahmed**, G. Rizzoni Fault Diagnosis of Pneumatic Systems: Application of a Systematic Model-Based Methodology, IFAC-PapersOnLine, Vol 50, Issue 1, 2017, Pages 3294-3300
- C34 A. Yar, A. I. Bhatti, **Q. Ahmed**, High Fidelity Engine Model for a Unified Control, Diagnostic and Condition Monitoring Framework, 2017 American Control Conference (ACC), Seattle, WA, 2017, pp. 1629-1635.
- C33 B. M. Rahman, G. T. Busch, **Q. Ahmed**, G. Rizzoni, Structural Analysis-Based Fault Diagnosis of Pneumatic Systems in 2016 ASME Dynamic System and Control Conference, Minneapolis, MN USA. Paper No. DSCC2016-9888, pp. V001T12A004; 10 pages
- C32 **Q. Ahmed**, M. Arasu, J. Zhang, G. Rizzoni Sensors Installation Guide to Monitor Automatic Transmission Performance, IFAC-PapersOnLine, Volume 49, Issue 11, 2016, Pages 736-741,
- C31 H. M. Khalid, **Q. Ahmed**, J. Peng, G. Rizzoni Pack-Level Current-Split Estimation for Health Monitoring in Li-Ion Batteries, 2016 American Control Conference (ACC), Boston, MA, 2016, pp. 1506-1511.
- C30 A. Hanif, A. I. Bhatti, **Q. Ahmed** Estimation of Thermally de-rated Torque of an HEV Drive using Robust LPV Observer, 2016 American Control Conference (ACC), Boston, MA, 2016, pp. 1530-1535.
- C29 S. M. N. Ali, A. Hanif, and **Q. Ahmed**, " Reviews in Thermal Effects on The Performance of Electric Motors", 2016 International Conference on Intelligent Systems Engineering (ICISE), Islamabad, 2016, pp. 83-88.
- C28 G. Yin, Q. chen, **Q. Ahmed**, X. Jin, C. Bian, Yaw Stability of Four-wheel-drive Electric Vehicle based on Multi-Model Predictive Control 2015 34th Chinese Control Conference (CCC), Hangzhou, 2015, pp. 8159-8164.
- C27 Z. Liu, **Q. Ahmed**, G. Rizzoni, and H. He, Structural Analysis Based Fault Detection and Isolation Applied for A Lithium-Ion Battery Pack IFAC-PapersOnLine, Volume 48, Issue 21, 2015, Pages 1465-1470,
- C26 Q. Chen, **Q. Ahmed**, G. Rizzoni, E. Frisk, H. Zhai Model-Based Fault Diagnosis of an Automated Manual Transmission Shifting Actuator IFAC-PapersOnLine, Volume 48, Issue 21, 2015, Pages 1479-1484,

- C25 **Q. Ahmed**, H. Cai, G. Rizzoni, L. Xu Modeling and control of a novel power split hybrid electric vehicle in 7th ASME Annual Dynamic Systems and Control, 2014. TX, US. Paper No. DSCC2014-5975, pp. V002T34A001; 10 pages
- C24 Q. Chen, **Q. Ahmed**, G. Rizzoni, Sensor placement analysis for fault detectability and isolability of an automated manual transmission In 7th ASME Annual Dynamic Systems and Control, 2014. TX, US. Paper No. DSCC2014-6067, pp. V003T39A002; 10 pages
- C23 Z. Liu, **Q. Ahmed**, G. Rizzoni, H. He, Fault detection and isolation for lithium-ion battery system using structural analysis and sequential residual generation In 7th ASME Annual Dynamic Systems and Control, 2014. TX, US. Paper No. DSCC2014-6101, pp. V002T36A005; 10 pages
- C22 A. Hanif, A. I. Bhatti, A. R. Yasin, G. Murtaza, and **Q. Ahmed** Sliding Mode Based Robust Observer Design for Field-oriented Control of 3- phase Induction Machine Drive for Applications in Hybrid Electric Vehicles In 33rd Chinese Control Conference, 2014. Nanjiang, China.
- C21 A. Hanif, A. I. Bhatti, and **Q. Ahmed** An LMI Based Robust Observer and Controller Design for the for the Field-oriented Control of 3-F Induction Machine Drive for the Applications in Hybrid Electric Vehicles In WECC2013, NUST, 2013. Islamabad, Pakistan.
- C20 G. Murtaza, A. I. Bhatti, A. Hanif, and **Q. Ahmed** Modeling of Atkinson Engine for Hybrid Electric Vehicles In WECC2013, NUST, 2013. Islamabad, Pakistan.
- C19 F. Tahir, **Q. Ahmed** and A. I. Bhatti Real-Time Switched Model Predictive Control of a Twin Rotor System 52nd IEEE Conference on Decision and Control, Firenze, 2013, pp. 4847-4852.
- C18 J. Zhang, G. Rizzoni, **Q. Ahmed**, Fault Modelling for Hierarchical Fault Diagnosis and Prognosis In 6th ASME Annual Dynamic Systems and Control, 2013. Palo Alto, CA, USA. Paper No. DSCC2013-3825, pp. V002T24A003; 10 pages
- C17 M. A. Akram, A. I. Bhatti, **Q. Ahmed**, Air/Fuel Ratio Estimation of SI Engine Using Higher Order Sliding Mode IFAC Proceedings Volumes, Volume 46, Issue 21, 2013, Pages 501-506,
- C16 A. Arshad, A. I. Bhatti, R. Samar, **Q. Ahmed**, E. Aamir, Model Development of UCG and Calorific Value Maintenance via Sliding Mode Control 2012 International Conference on Emerging Technologies, Islamabad, 2012, pp. 1-6.
- C15 S. S. H. Rizvi, A. I. Bhatti, S. Rehman, **Q. Ahmed**, S. Iqbal, N. A. Malik Smooth Second-Order Sliding Mode Control Design of PEM Fuel Cell System Proceedings of 2012 UKACC International Conference on Control, Cardiff, 2012, pp. 1063-1069.
- C14 S. S. H. Rizvi, A. I. Bhatti, Q. Khan, **Q. Ahmad**, A. Hameed, Z. Butt Smooth Sliding Mode Control for PEM Fuel Cell System 2012 24th Chinese Control and Decision Conference (CCDC), Taiyuan, 2012, pp. 3557-3562.
- C13 S. Saqib H. Rizvi, A. I. Bhatti, Qudrat Khan, **Q. Ahmed**, Asad Hameed, HOSM control design of PEM fuel cell using super twisting algorithm. Proceedings of 2012 9th International Bhurban Conference on Applied Sciences & Technology (IBCAST), Islamabad, 2012, pp. 43-50.
- C12 I. Khan, A. I. Bhatti, Q. Khan, **Q. Ahmed**, Sliding mode control of lateral dynamics of an AUV. Proceedings of 2012 9th International Bhurban Conference on Applied Sciences & Technology (IBCAST), Islamabad, 2012, pp. 27-31.
- C11 M. A. Akram, A. I. Bhatti, **Q. Ahmed**, M. Raza; , Model Tuning and Fault Detection of Automotive Engine Coolant System Using Higher Order Sliding Mode In 9th European Workshop on Advanced Control and Diagnosis. Hungary, 2011.

- C10 Q. Khan, A.I. Bhatti, and **Q. Ahmed**. Dynamic Integral Sliding Mode Control of Nonlinear SISO Systems with States Dependent Matched and Mismatched Uncertainties. IFAC Proceedings Volumes, Volume 44, Issue 1, 2011, Pages 3932-3937,.
- C9 **Q. Ahmed** and A.I. Bhatti. Second order sliding mode observer for estimation of SI engine volumetric efficiency and throttle discharge coefficient. 2010 11th International Workshop on Variable Structure Systems (VSS), Mexico City, 2010, pp. 307-312.
- C8 **Q. Ahmed**, A.I. Bhatti, S. Iqbal, and I.H. Kazmi. 2-Sliding mode based robust control for 2-DOF helicopter. 2010 11th International Workshop on Variable Structure Systems (VSS), Mexico City, 2010, pp. 481-486.
- C7 R. Doraiswami, L. Cheded, Haris M. Khalid, **Q. Ahmed** and A. Khoukhi. Robust Control of a Closed-Loop Identified System with Parametric/Model Uncertainties and External Disturbances. 2010 International Conference on Intelligent Systems, Modelling and Simulation, Liverpool, 2010, pp. 270-275.
- C6 **Q. Ahmed**, A.I. Bhatti, and S. Iqbal. Nonlinear robust decoupling control design for twin rotor system. 2009 7th Asian Control Conference, Hong Kong, 2009, pp. 937-942.
- C5 **Q. Ahmed**, A.I. Bhatti, and S. Iqbal. Robust decoupling control design for twin rotor system using hadamard weights. 2009 IEEE Control Applications, (CCA) & Intelligent Control, (ISIC), St. Petersburg, 2009, pp. 1009-1014.
- C4 **Q. Ahmed**, A.I. Bhatti, and M. A Rizvi. LMI Based Sliding Mode Control Design for Twin Rotor System. In Control and Its Applications, SIAM Conference on, USA 2009.
- C3 S. Iqbal, A. I. Bhatti and **Q. Ahmed**. Dynamic Analysis and Robust Control of the Stewart Platform with Moving Payloads. IFAC Proceedings Volumes, Volume 41, Issue 2, 2008, Pages 5324-5329,
- C2 S. Iqbal, A. I. Bhatti and **Q. Ahmed**. Determination of realistic uncertainty bounds for the Stewart Platform with payload dynamics. In Control Applications, 2008 IEEE International Conference on Control Applications, San Antonio, TX, 2008, pp. 995-1000.
- C1 **Q. Ahmed** and A. I. Bhatti. Exploring LEGO Robotics to Deliver Insights into Control Systems. In Robotics Educators Conference 2008, Carnegie Mellon University Robotics Academy, USA, 2008.

#### In Process

1. S. P. Singh, A. Hanif, Q. Ahmed, M. Meijier, J. Lahti Optimal Hotel Load Management in 48V Mild Hybrid Class 8 Trucks Submitted Applied Energy.
2. H. M. Y. Naeem, Y. A. Butt, Q. Ahmed, A. I. Bhatti, Eco-driving Control of Electric Vehicle with Real Time Constraints submitted in Control Engineering Practice.
3. H. Anwar, A. Vishwanath, A. Chunodkar, Q. Ahmed, Comprehensive Energy Footprint Benchmarking Algorithm for Electrified Powertrains submitted in IEEE Transactions on Control Systems Technology.
4. M. Arasu, Q. Ahmed, G. Rizzoni Distance-Critical Driving-Based Energy Optimization of Range-Extended Electric Delivery Vehicle submitted to Applied Energy.
5. M. Q. Fahim, H. Anwar, M. Villani, Q. Ahmed, K. Ramakrishnan Development of Simultaneous and Decomposition-Based Fuel Consumption Optimization Framework for Hybrid Electric Vehicles submitted in American Control Conference 2022.
6. S. Khuntia, S. P. Singh, A. Hanif, Q. Ahmed, M. Meijer, Control Oriented Model of Cabin-HVAC System in a Long-Haul Class 8 Trucks for Energy Management Applications submitted in SAE World Congress 2022.

7. M. Q. Fahim, H. Anwar, M. Villani, Q. Ahmed, K. Ramakrishnan Application-Specific co-optimization of controller and design space for efficient hybrid electric vehicles submitted in SAE World Congress 2022.