

M. Muneeb Ur Rehman

Contact Information muneeb@aggiemail.usu.edu +1 (435) 512-5803
http://power.usu.edu/users/mmuneeb

Summary

- Ph.D. student at Utah State University, advised by Prof. Regan Zane
- Looking for internship and job opportunities for summer 2017 and onward
- 4+ years of research experience in switched-mode power conversion (dc/dc, dc/ac, ac/dc) and battery management system. Published over 10 papers in professional conferences

Education Utah State University - Logan, Utah, USA

Ph.D. Electrical Engineering **Fall 2013 - Fall 2017**

- Focus Area: Power Electronics; Adviser: Prof. Regan Zane
- Thesis: Modular battery systems with integrated battery management and power processing for electric vehicle and micro-grid applications
- Selected coursework: Introduction to Power Electronics, Electric Vehicles Design Lab, Linear Multi-variable Control, Nonlinear and Adaptive Control, Real-time Processors

University of Colorado - Colorado Springs & Boulder, Colorado, USA

Graduate Certificate in Electric Drivetrain Technology **Fall 2013 - Spring 2016**

- Coursework: Power electronics for electric vehicles; Modeling, simulation, and identification of battery dynamics; Battery management and control; Adjustable speed AC drives

School of Science & Engineering, LUMS - Lahore, Pakistan

BS Electrical Engineering **Fall 2008 - Spring 2012**

- Selected coursework: Power Electronics, Power Systems, Feedback Control Systems, Digital Signal Processing, Microelectronics

Professional Experience Utah State University - Utah, USA **August 2013 - present**

Graduate Student Research Assistant

- Worked on modeling, design, and control of bi-directional dc/dc power converters for battery management and dc bus power processing in electric vehicles and micro-grids
- Built an integrated BMS-dc/dc system hardware and control firmware for a commercial electric vehicle battery pack that has been extensively evaluated at NREL for more than a year
- Collaborated with a multi-disciplinary team including Ford Motor Company, National Renewable Energy Lab, University of Colorado Boulder and Colorado Springs

School of Science & Engineering at LUMS - Pakistan **August 2011 - June 2013**

Research Assistant

- Developed a dc/dc converter for photovoltaic solar panel integration
- Analyzed the power, photo, spectral, & harmonic characteristics of LED lamps

Skills

- Modeling, design, and control of dc/dc, dc/ac, ac/dc power converters
- Lithium-ion battery modeling and state estimation
- Simulation in Matlab/Simulink, PLECS, Spice
- PCB layout and design in Altium
- DSP, microcontroller, and FPGA firmware development in C/C++, VHDL, Python
- Networking standards CAN, RS485, SPI, I2C

Awards & Honors

Best Poster Presentation Award , Applied Power Electronics Conf. & Expo (APEC)	2014
Transportation System Committee Paper Award (2nd Prize) , ECCE	2014
Student Travel Grants from Energy Conversion Congress and Exposition (ECCE)	2014, 16
Student Travel Grants from Conf. on Control and Modeling for Power Electronics	2015, 16
Worldwide Finalist , Microsoft Imagine Cup (Embedded Development Category)	2011

**Selected
Publications**

- [1] **M. Muneeb Ur Rehman**; F. Zhang; R. Zane; and D. Maksimovic, “Design and control of an integrated BMS/DC-DC system for electric vehicles”, 2016 IEEE 17th Workshop on Control and Modeling for Power Electronics (COMPEL), June, 2016.
- [2] **M. Muneeb Ur Rehman**; F. Zhang; M. Evzelman; R. Zane; K. Smith; and D. Maksimovic, “Advanced Cell-level Control for Extending Electric Vehicle Battery Pack Lifetime”, 2016 IEEE Energy Conversion Congress and Exposition (ECCE), Milwaukee, WI, 2016.
- [3] M. Evzelman, **M. Muneeb Ur Rehman**, K. Hathaway, R. Zane, D. Costinett and D. Maksimovic, “Active Balancing System for Electric Vehicles With Incorporated Low-Voltage Bus,” in IEEE Transactions on Power Electronics, vol. 31, no. 11, pp. 7887-7895, Nov. 2016.
- [4] **M. Muneeb Ur Rehman**; F. Zhang; Evzelman, M.; Zane, R.; Maksimovic, D., “Control of a series-input, parallel-output cell balancing system for electric vehicle battery packs,” 2015 IEEE 16th Workshop on Control and Modeling for Power Electronics (COMPEL), Vancouver, BC, 2015.
- [5] F. Zhang; **M. Muneeb Ur Rehman**; Zane, R.; Maksimovic, D., “Improved Steady-State Model of the Dual-Active-Bridge Converter,” 2015 IEEE Energy Conversion Congress and Exposition (ECCE), Montreal, QC, 2015.
- [6] F. Zhang; **M. Muneeb Ur Rehman**; H. Wang; Y. Levron; G. Plett; R. Zane; D. Maksimovic, “State-of-charge Estimation based on Microcontroller-implemented Sigma-point Kalman filter in a Modular Cell Balancing System for Lithium-Ion Battery Packs,” 2015 IEEE 16th Workshop on Control and Modeling for Power Electronics (COMPEL), Vancouver, BC, 2015.
- [7] **M. Muneeb Ur Rehman**; Evzelman, M.; Hathaway, K.; Zane, R.; Plett, G.L.; Smith, K.; Wood, E.; Maksimovic, D., “Modular approach for continuous cell-level balancing to improve performance of large battery packs,” 2014 IEEE Energy Conversion Congress and Exposition (ECCE), Pittsburgh, PA, 2014.
- [8] D. Costinett, K. Hathaway, **M. Muneeb Ur Rehman**, M. Evzelman, R. Zane, Y. Levron, and D. Maksimovic, “Active Balancing System for Electric Vehicles with Incorporated Low Voltage Bus,” 29th IEEE Applied Power Electronics Conference and Exposition (APEC), Fort Worth, TX, 2014.