Dr. Minjie Chen

Electrical and Computer Engineering (ECE)
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Appointments

2024-	**Associate Professor, ECE & ACEE, Princeton University**
	Associate Director for Graduate Studies (ECE)
	Associate Director for Research (ACEE)
2017-2024	**Assistant Professor, ECE & ACEE, Princeton University**
2015-2016	**Postdoctoral Associate, EECS & RLE, MIT**
2013	**Analog Circuit Designer, Kilby Labs, Texas Instruments**

Education

2009-2015	**Ph.D., S.M., E.E., EECS, MIT (4.0/4.0)** 🏆 Dimitris N. Chorafas Doctoral Thesis Award, E.E. Landsman Fellowship Advisors: Prof. David Perreault (MIT), Prof. Khurram Afridi (Cornell)
2005-2009	**B.S., EE, Tsinghua University (3.92/4.0), HKUST (4.0/4.0)** 🏆 Highest Honor, National Scholarship (Tsinghua), Dean's List (HKUST) Advisors: Prof. Chongqing Kang (Tsinghua), Prof. Albert Kai-Sun Wong (HKUST)

Selected Awards

· ASAE-IEEE Power of Associations Silver Award, 2024
· IEEE PELS Distinguished Lecturer, 2024
· IEEE PELS Transactions Prize Paper Award, 1st Place, 2023
· IEEE PELS Transactions Prize Paper Award, 1st Place, 2022
· IEEE PELS Transactions Prize Paper Award, 1st Place, 2021
· IEEE PELS Transactions Prize Paper Award, 2nd Place, 2021
· IEEE PELS Transactions Prize Paper Award, 2nd Place, 2020
· IEEE PELS Transactions Prize Paper Award, 2nd Place, 2017
· IEEE PELS Transactions Prize Paper Award, 1st Place, 2016
· IEEE PELS Richard M. Bass Outstanding Young Engineer Award, 2023
· IEEE-RAS IROS Best Paper Award on Robot Mechanisms and Design, Finalist, 2023
· IEEE EPS 3D-PEIM Workshop Rao R. Tummala Best Paper Award, 2023
· Princeton SEAS E. Lawrence Keyes, Jr./Emerson Electric Co. Junior Faculty Award, 2022
· IEEE-RAS ICRA Bioinspired and Biohybrid Systems, Best Poster Award, 2022
· IEEE-RAS RoboSoft Software for Soft Robotics, Outstanding Poster Prize, 2022
· Princeton SEAS Commendation List for Outstanding Teaching, 2023
· Princeton SEAS Commendation List for Outstanding Teaching, 2021
· Princeton SEAS Commendation List for Outstanding Teaching, 2020
· Princeton SEAS Commendation List for Outstanding Teaching, 2019

· Open Compute Project (OCP) Future Technologies Symposium Best Paper Award, 2021
· C3.ai DTI Faculty Research Award, 2021
· IEEE PELS COMPEL Workshop Best Paper Award, 2020
· NSF CAREER Award, 2019
· IEEE ECCE Best Demonstration Award, 1st Place, 2023
· IEEE ECCE Best Demonstration Award, 1st Place, 2021
· IEEE ECCE Best Demonstration Award, 1st Place, 2019
· IEEE ECCE Best Demonstration Award, 1st Place, 2014
· IEEE Senior Member, 2020
· Princeton Keller Center Innovation Forum, 1st Place, 2019
· Siebel Energy Institute Faculty Research Award, 2018
· IEEE TPEL Outstanding Reviewer, 2016
· MIT EECS Dimitris N. Chorafas Doctoral Thesis Award, 2015
· MIT EECS E.E. Landsman Fellowship, 2009 · Dean's List, HKUST, 2008
· National Scholarship, Highest Honor, Tsinghua University, 2006–2009

Journal Papers

[J39] D. H. Zhou, J. Celikovic, D. Maksimovic, and **M. Chen**, "Balancing Multiphase FCML Converters with Coupled Inductors: Modeling, Analysis, Limitations," *IEEE Transactions on Power Electronics*, accepted.

[J38] Y. Li, Y. Liao, **M. Chen**, X. Wang, L. Nordström, P. Mittal, and H. V. Poor, "Machine Learning at the Grid-Edge: Data-Driven Impedance Models for Model-Free Smart Inverters," *IEEE Transactions on Power Electronics*, accepted.

[J37] S. Wang, H. Li, D. Serrano; T. Guillod, J. Li, C. R. Sullivan, and **M. Chen**, "A Simplified Dc-Bias Injection Method for Characterizing Power Magnetics using a Voltage Mirror Transformer," *IEEE Transactions on Power Electronics*, accepted.

[J36] T. Sen, Y. Elasser and **M. Chen**, "Origami Inductor: Foldable 3-D Polyhedron Multiphase Air-Coupled Inductors with Flux Cancellation and Faster Transient," *IEEE Transactions on Power Electronics*, accepted.

[J35] Z. Zheng, P. Kumar, Y. Chen, H. Cheng, S. Wagner, **M. Chen**, N. Verma, J. C. Sturm, "Piezo-electric Soft Robot Inchworm Motion by Tuning Ground Friction through Robot Shape: Quasi-Static Modeling and Experimental Validation," *IEEE Transactions on Robotics*, vol. 40, pp. 2339-2356, 2024.

[J34] Y. Liao, Y. Li, **M. Chen**, L. Nordström, X. Wang, P. Mittal, and H. V. Poor, "Neural Network Design for Impedance Modeling of Power Electronic Systems Based on Latent Features," *IEEE Transactions on Neural Networks and Learning Systems*, vol. 35, no. 5, pp. 5968-5980, May 2024.

[J33] Y. Elasser, J. Baek, K. Radhakrishnan, H. Gan, J. Douglas, H. K. Krishnamurthy, X. Li, S. Jiang, V. De, C. R. Sullivan, **M. Chen**, "Mini-LEGO CPU Voltage Regulator," *IEEE Transactions on Power Electronics*, vol. 39, no. 3, pp. 3391-3410, March 2024.

[J32] Y. Elasser, H. Li, P. Wang, J. Baek, K. Radhakrishnan, S. Jiang, H. Gan, X. Zhang, D. Giuliano, and **M. Chen**, "Circuits and Magnetics co-Design for Ultra-thin Vertical Power Delivery: A

Snapshot Review," *MRS Advances*, Dec. 2023.

[J31] H. Li, D. Serrano, S. Wang, and **M. Chen**, "MagNet-AI: Neural Network as Datasheet for Magnetics Modeling and Material Recommendation," *IEEE Trans. on Power Electronics*, vol. 38, no. 12, pp. 15854-15869, Dec. 2023.

[J30] H. Li, D. Serrano, S. Wang, T. H. Guillod, M. Luo, V. Bansal, N. Jha, Y. Chen, C. R. Sullivan, **M. Chen**, "How MagNet: Machine Learning Framework for Modeling Power Magnetic Material Characteristics," *IEEE Transactions on Power Electron.*, vol. 38, no. 12, pp. 15829-15853, Dec. 2023. [🏆 IEEE Power Electronics Society Transactions Prize Paper Award, 1st Place]
—— *"selected from 1,364 papers published on IEEE Transactions on Power Electronics in 2023"*

[J29] D. Serrano, H. Li, S. Wang, T. H. Guillod, M. Luo, V. Bansal, N. Jha, Y. Chen, C. R. Sullivan, **M. Chen**, "Why MagNet: Quantifying the Complexity of Modeling Power Magnetic Material Characteristics," *IEEE Trans. on Power Electronics*, vol. 38, no. 11, pp. 14292-14316, Nov. 2023.

[J28] P. Wang, Y. Chen, G. Szczeszynski, S. Allen, D. Giuliano, and **M. Chen**, "MSC-PoL: Hybrid GaN-Si Multistacked Switched Capacitor 48-V PwrSiP VRM for Chiplets," *IEEE Transactions on Power Electronics*, vol. 38, no. 10, pp. 12815-12833, Oct. 2023.

[J27] P. Wang, D. H. Zhou, H. Li, D. M. Giuliano, G. Szczeszynski, S. Allen, and **M. Chen**, "Interphase L-C Resonance and Stability Analysis of Series-Capacitor Buck Converters," *IEEE Transactions on Power Electronics*, vol. 38, no. 5, pp. 5680-5687, May 2023.

[J26] J. Baek, Y. Elasser, and **M. Chen**, "MIPS: Multiphase Integrated Planar Symmetric Coupled Inductor for Ultra-Thin VRM," *IEEE Transactions on Power Electronics*, vol. 38, no. 5, pp. 5609-5614, May 2023.

[J25] M. Liao, H. Li, P. Wang, T. Sen, Y. Chen and **M. Chen**, "Machine Learning Methods for Feedforward Power Flow Control of Multi-Active-Bridge Converters," *IEEE Trans. on Power Electronics*, vol. 38, no. 2, pp. 1692-1707, Feb. 2023.

[J24] P. Wang and **M. Chen**, "Analysis and Design of Series Voltage Compensator for Differential Power Processing," *IEEE Jour. of Emerging and Selected Topics in Power Electron.*, vol. 10, no. 6, pp. 7890-7903, Dec. 2022.

[J23] P. Wang, D. H. Zhou, Y. Elasser, J. Baek and **M. Chen**, "Matrix Coupled All-in-One Magnetics for PWM Power Conversion," *IEEE Transactions on Power Electronics*, vol. 37, no. 12, pp. 15035-15050, Dec. 2022.

[J22] Y. Chen, P. Wang, H. Cheng, G. Szczeszynski, S. Allen, D. M. Giuliano, and **M. Chen**, "Virtual Intermediate Bus CPU Voltage Regulator," *IEEE Trans. on Power Electronics*, vol. 37, no. 6, pp. 6883-6898, June 2022.

[J21] J. Baek, Y. Elasser, K. Radhakrishnan, H. Gan, J. Douglas, H. K. Krishnamurthy, X. Li, S. Jiang, C. R. Sullivan, and **M. Chen**, "Vertical Stacked LEGO-PoL CPU Voltage Regulator," *IEEE Trans. on Power Electronics*, vol. 37, no. 6, pp. 6305-6322, June 2022.
[🏆 IEEE Power Electronics Society Transactions Prize Paper Award, 1st Place]
—— *"selected from 1,292 papers published on IEEE Transactions on Power Electronics in 2022"*

[J20] T. Liu, X. Zhao, P. Wang, Q. C. Burlingame, J. Hu, K. Roh, Z. Xu, B. P. Rand, **M. Chen**, and Y.-L.

Loo, "Highly Transparent, Scalable, and Stable Perovskite Solar Cells with Minimal Aesthetic Compromise," *Advanced Energy Materials*, 2022, 2200402.

[J19] D. H. Zhou, Y. Elasser, J. Baek, and **M. Chen**, "Reluctance-Based Dynamic Models for Multiphase Coupled Inductor Buck Converters," *IEEE Trans. on Power Electronics*, vol. 37, no. 2, pp. 1334-1351, Feb. 2022.

[J18] P. Wang, R. C. N. Pilawa, P. Krein, and **M. Chen**, "Stochastic Power Loss Analysis of Differential Power Processing," *IEEE Trans. on Power Electron.*, vol. 37, no. 1, pp. 81-99, Jan. 2022.

[J17] **M. Chen**, C. R. Sullivan, "Unified Models for Coupled Inductors Applied to Multiphase PWM Converters," *IEEE Trans. on Power Electronics*, vol. 36, no. 12, pp. 14155-14174, Dec. 2021.
[🏆 IEEE Power Electronics Society Transactions Prize Paper Award, 1st Place]
—— *"selected from 1,233 papers published on IEEE Transactions on Power Electronics in 2021"*

[J16] P. Wang, Y. Chen, J. Yuan, R. C. N. Pilawa-Podgurski, **M. Chen**, "Differential Power Processing for Ultra-Efficient Data Storage," *IEEE Transactions on Power Electronics*, vol. 36, no. 4, pp. 4269-4286, April 2021.
[🏆 IEEE Power Electronics Society Transactions Prize Paper Award, 2nd Place]
—— *"selected from 1,233 papers published on IEEE Transactions on Power Electronics in 2021"*

[J15] Y. Chen, **M. Chen**, and D. Xu, "A 3kW Two-Stage Transformerless PV Inverter with Resonant DC Link and ZVS-PWM Operation," *IEEE Trans. on Industry Applications*, vol. 57, no. 2, pp. 1495-1506, March-April 2021.

[J14] M. Liu, Y. Chen, Y. Elasser, and **M. Chen**, "Dual Frequency Hierarchical Modular Multilayer Battery Balancer Architecture," *IEEE Trans. on Power Electronics*, vol. 36, no. 3, pp. 3099-3110, March 2021.

[J13] Y. Chen, P. Wang, Y. Elasser, and **M. Chen**, "Multicell Reconfigurable Multi-Input Multi-Output Energy Router Architecture," *IEEE Transactions on Power Electronics*, vol. 35, no. 12, pp. 13210-13224, Dec. 2020.
[🏆 IEEE Power Electronics Society Transactions Prize Paper Award, 2nd Place]
—— *"selected from 1,148 papers published on IEEE Transactions on Power Electronics in 2020"*

[J12] **M. Chen** and H. V. Poor, "High-Frequency Power Electronics at the Grid Edge: A Bottom-Up Approach Toward the Smart Grid," *IEEE Electrification Magazine*, vol. 8, no. 3, pp. 6-17, Sept. 2020.

[J11] M. Liu and **M. Chen**, "Dual-Band Wireless Power Transfer with Reactance Steering Network and Reconfigurable Receivers," *IEEE Trans. on Power Electronics*, vol. 35, no. 1, pp. 496-507, Jan. 2020.

[J10] **M. Chen**, S. Chakraborty, and D. J. Perreault, "Multitrack Power Factor Correction Architecture," *IEEE Trans. on Power Electronics*, vol.34, no.3, pp. 2454-2466, March 2019.

[J9] K. K. Berggren, Q.-Y. Zhao, N. Abebe, **M. Chen**, P. Ravindran, A. McCaughan, and J. C. Bardin, "A Superconducting Nanowire can be Modeled by Using SPICE," *Superconductor Science and Technology*, vol. 31, no. 5, 2018.

[J8] Y. Ni, S. Pervaiz, **M. Chen**, K. K. Afridi, "Energy Density Enhancement of Stacked Switched

Capacitor Energy Buffers through Capacitance Ratio Optimization," *IEEE Trans. on Power Electronics*, vol. 32, no. 8, pp. 6363-6380, August 2017.

[J7] **M. Chen**, K. K. Afridi, S. Chakraborty, and D. J. Perreault, "Multitrack Power Conversion Architecture," *IEEE Transactions on Power Electronics*, vol.32, no.1, pp. 325-340, Jan. 2017. [🏆 IEEE Power Electronics Society Transactions Prize Paper Award, 2nd Place] —— *"selected from 789 papers published on IEEE Transactions on Power Electronics in 2017"*

[J6] Y. Tang, **M. Chen**, and L. Ran, "A Compact MMC Submodule Structure with Reduced Capacitor Size Using the Stacked Switched Capacitor Architecture," *IEEE Trans. on Power Electronics*, vol.31, no.10, pp. 6920-6936, October 2016.

[J5] **M. Chen**, M. Araghchini, K. K. Afridi, J. H. Lang, C. R. Sullivan, and D. J. Perreault, "A Systematic Approach to Modeling Impedances and Current Distribution in Planar Magnetics," *IEEE Transactions on Power Electronics*, vol.31, no.1, pp. 560-580, Jan. 2016. [🏆 IEEE Power Electronics Society Transactions Prize Paper Award, 1st Place] —— *"selected from 731 papers published on IEEE Transactions on Power Electronics in 2016"*

[J4] **M. Chen**, K. K. Afridi, and D. J. Perreault, "A Multilevel Energy Buffer and Voltage Modulator for Grid-Interfaced Micro-Inverters," *IEEE Trans. on Power Electronics*, vol.30, no.3, pp. 1203-1219, March 2015.

[J3] K. K. Afridi, **M. Chen**, and D. J. Perreault, "Enhanced Stacked Switched Capacitor Energy Buffer Architecture," *IEEE Trans. on Industry Applications*, pp. 1141-1149, March/April 2014.

[J2] **M. Chen**, K. K. Afridi, and D. J. Perreault, "Stacked Switched Capacitor Energy Buffer Architecture," *IEEE Trans. on Power Electronics*, vol.28, no.11, pp. 5183-5195, November 2013.

[J1] X. Chen, C. Kang, and **M. Chen**, "Short Term Probabilistic Forecasting of the Magnitude and Timing of Extreme Load," *Proceedings of the Chinese Society of Electrical Engineering (Proc. CSEE)*, pp. 64–72, Beijing, China, August, 2011.

CONFERENCE PROCEEDINGS

[C82] **M. Chen** and D. C. Cheng, "Power Electronics Turing Test: A Path Toward Strong AI in Power Electronics," *IEEE Workshop on Control and Modeling for Power Electronics (COMPEL)*, Lahore, Pakistan, 2024

[C81] S. Wang, R. Burns, C. Gmachl, and **M. Chen**, "A Pulsed 6.78 MHz Inductive Wireless Power Transfer System for Quantum Cascade Lasers," *IEEE Applied Power Electronics Conference (APEC)*, Long Beach, CA, USA, 2024. [🏆 IEEE APEC Outstanding Presentation Award]

[C80] M. Liao, T. Sen, Y. Elasser, H. A. Hassan, A. Pigney, E. Knapp, and **M. Chen**, "Drone Charging Stations on Telecom Towers with Series-Stacked Capacitive Differential Wireless Power Transfer," *IEEE Applied Power Electronics Conference (APEC)*, Long Beach, CA, USA, 2024. [🏆 IEEE APEC Outstanding Presentation Award]

[C79] T. Sen, M. Liao, Y. Elasser, and **M. Chen**, "Power Amplifiers with Reactance Steering Network for Efficient Driving of Variable Impedance Inductively Coupled Plasma Coils," *IEEE Applied Power Electronics Conference (APEC)*, Long Beach, CA, USA, 2024. [🏆 IEEE APEC Outstanding Presentation Award]

[C78] J. Li, E. Deleu, W. Lee, H. Li, **M. Chen**, and S. Wang, "Investigating the Mutual Impact of Waveform, Temperature, and DC-Bias on Magnetic Core Loss Using Neural Network Models," *IEEE Applied Power Electronics Conference (APEC)*, Long Beach, CA, USA, 2024.

[C77] D. Zhou and **M. Chen**, "Feedback Modelling of Passively Balanced Flying Capacitor Multilevel Converters," *IEEE Applied Power Electronics Conference (APEC)*, Long Beach, CA, USA, 2024.

[C76] E. Deleu, H. Li, J. Li, W. Lee , T. Guillod, C. R. Sullivan, S. Wang, and **M. Chen**, "Multi-Material Power Magnetics Modeling with a Modular and Scalable Machine Learning Framework," *IEEE Applied Power Electronics Conference (APEC)*, Orlando, FL, USA, 2024.

[C75] H. Cheng, Z. Zheng, P. Kumar, W. Afridi, B. Kim, S. Wagner, N. Verma, J. C. Sturm, **M. Chen**, "eViper: A Scalable Platform for Untethered Modular Soft Robots," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Detroit, MI, USA, 2023, pp. 604-611. [🏆 IEEE IROS Best Paper Award on Robot Mechanisms and Design, Finalist, 2023]

[C74] T. Sen, Y. Elasser, **M. Chen**, "Origami Inductors: Foldable 3-D Polyhedron Air-Coupled Inductors for MHz Power Conversion," *IEEE Applied Power Electronics Conference (APEC)*, Orlando, FL, USA, 2023. [🏆 IEEE APEC Outstanding Presentation Award]

[C73] S. Wang, D. Serrano, H. Li, A. Lin, T. Guillod, M. Luo, C. R. Sullivan, **M. Chen**, "A Simplified DC-Bias Injection Method with Mirror Transformer for Magnetic Material Characterization," *IEEE Applied Power Electronics Conference (APEC)*, Orlando, FL, USA, 2023. [🏆 IEEE APEC Outstanding Presentation Award]

[C72] Y. Elasser, J. Baek, K. Radhakrishnan, H. Gan, J. Douglas, V. De, S. Jiang, H. Krishnamurthy, X. Li, C. R. Sullivan, **M. Chen**, "Mini-LEGO: A 1.5-MHz 240-A 48-V-to-1-V CPU VRM with 8.4-mm Height for Vertical Power Delivery," *IEEE Applied Power Electronics Conference (APEC)*, Orlando, FL, USA, 2023. [🏆 IEEE APEC Outstanding Presentation Award]

[C71] L. Cheng, Y. Wu, X. Wang, **M. Chen**, Y. Li, L. Nordström, F. Dijkhuizen, "Online Identification of Wind Farm Wide Frequency Admittance with Power Cables Using the Artificial Neural Network," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Nashville, TN, USA, 2023, pp. 1530-1535.

[C70] H. Li, S. Wang and **M. Chen**, "Compact Neural-Network Digital-Twin Models and Material Comparison for Power Magnetics," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Nashville, TN, USA, 2023, pp. 5624-5631.

[C69] D. H. Zhou, Y. Elasser and **M. Chen**, "Multi-Resonant Dynamics and Voltage Balancing of Multiphase Coupled Inductor FCML Converters," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Nashville, TN, USA, 2023, pp. 3607-3614.

[C68] D. Zhou, **M. Chen**, "Switching Frequency is Not the Limit: Multiphase Coupled Inductor FCML Converter Tracking Signals Above the Switching Frequency," *IEEE 23rd Workshop on Control and Modeling for Power Electronics (COMPEL)*, Ann Arbor, MI, USA, 2023, pp. 1-7.

[C67] H. Cheng, Z. Zheng, P. Kumar, W. Afridi, B. Kim, S. Wagner, N. Verma, J. C. Sturm, **M. Chen**, "A Flexible Lightweight 7.4 V Input 300 V to 1500 V Output Power Converter for an Untethered Modular Piezoelectric Soft Robot," *IEEE 23rd Workshop on Control and Modeling for Power Electronics (COMPEL)*, Ann Arbor, MI, USA, 2023, pp. 1-7.

[C66] **M. Chen**, S. Jiang, J. A. Cobos, and B. Lehman, "Design Considerations for 48-V VRM: Architecture, Magnetics, and Performance Tradeoffs," *International Symposium on 3D Power Electronics Integration & Manufacturing (3D-PEIM)*, 2023. [🏆 IEEE 3D-PEIM Invited Paper]

[C65] M. Liao, D. H. Zhou, P. Wang, **M. Chen**, "Power Systems on Chiplet: Inductor-Linked Multi-Output Switched-Capacitor Multi-Rail Power Delivery on Chiplets," *International Symposium on 3D Power Electronics Integration & Manufacturing (3D-PEIM)*, 2023. [🏆 IEEE 3D-PEIM Rao R. Tummala Best Paper Award]

[C64] T. Guillod, J. S. Lee, H. Li, S. Wang, **M. Chen**, C. R. Sullivan, "Calculation of Ferrite Core Losses with Arbitrary Waveforms Using the Composite Waveform Hypothesis," *IEEE Applied Power Electronics Conference (APEC)*, Orlando, FL, USA, 2023.

[C63] P. Wang, D. Giuliano, S. Allen, **M. Chen**, "MSC-PoL: An Ultra-Thin 220-A/48-to-1-V Hybrid GaN-Si CPU VRM with Multistack Switched Capacitor Architecture and Coupled Magnetics," *IEEE Applied Power Electronics Conference (APEC)*, Orlando, FL, USA, 2023.

[C62] H. Li, D. Serrano, S. Wang, T. Guillod, M. Luo , **M. Chen**, "Predicting the B-H Loops of Power Magnetics with Transformer-Based Encoder-Projector-Decoder Neural Network Architecture," *IEEE Applied Power Electronics Conference (APEC)*, Orlando, FL, USA, 2023.

[C61] Z. Zheng, P. Kumar, H. Cheng, S. Wagner, **M. Chen**, N. Verma, and J. C. Sturm, "Wirelessly-Controlled Untethered Piezoelectric Planar Soft Robot Capable of Bidirectional Crawling and Rotation," *International Conference on Intelligent Robots and Systems (ICRA)*, 2023.

[C60] Z. Zheng, P. Kumar, Y. Chen, H. Cheng, S. Wagner, **M. Chen**, N. Verma, and J. C. Sturm, "Scalable Simulation and Demonstration of Jumping Piezoelectric 2-D Soft Robots," *IEEE International Conference on Robotics and Automation (ICRA)*, June 2022. [🏆 IEEE ICRA Bio-inspired and Bio-hybrid Robotic Systems, Best Poster Award]

[C59] Y. Li, Y. Liao, X. Wang, L. Nordström, P. Mittal, **M. Chen**, and H. Vincent Poor, "Neural Network Models and Transfer Learning for Impedance Modeling of Grid-Tied Inverters," *IEEE International Symposium on Power Electronics for Distributed Generation Systems (PEDG)*, 2022.

[C58] D. H. Zhou, J. Celikovic, Y. Elasser, D. Maksimovic and **M. Chen**, "Balancing Limits of Flying Capacitor Voltages in Coupled Inductor FCML Converters," *IEEE 23rd Workshop on Control and Modeling for Power Electronics (COMPEL)*, 2022, pp. 1-8.

[C57] P. Wang, D. Zhou, D. Giuliano, **M. Chen** and Y. Chen, "Multistack Switched-Capacitor Architecture with Coupled Magnetics for 48V-to-1V VRM," *IEEE 23rd Workshop on Control and Modeling for Power Electronics (COMPEL)*, 2022, pp. 1-7.

[C56] D. Serrano et al., "Neural Network as Datasheet: Modeling B-H Loops of Power Magnetics with Sequence-to-Sequence LSTM Encoder-Decoder Architecture," *IEEE 23rd Workshop on Control and Modeling for Power Electronics (COMPEL)*, 2022, pp. 1-8.

[C55] P. Wang, Y. Elasser, V. Yang, and **M. Chen**, "WAN Converter: A Family of Multicell PWM Converter with All-in-One Magnetics," *IEEE Applied Power Electronics Conference (APEC)*, Houston, March 2022. [🏆 IEEE APEC Outstanding Presentation Award]

[C54] H. Cheng, Z. Zheng, P. Kumar, Y. Chen, and **M. Chen**, "Hybrid-SoRo: Hybrid Switched Capacitor Power Management Architecture for Multi-Channel Piezoelectric Soft Robot," *IEEE Applied Power Electronics Conference (APEC)*, Houston, March 2022. [🏆 IEEE APEC Outstanding Presentation Award]

[C53] H. Li, D. Serrano, T. Guillod, E. Dogariu, A. Nadler, S. Wang, M. Luo, V. Bansal, Y. Chen, C. R. Sullivan, and **M. Chen**, "MagNet: an Open-Source Database for Data-Driven Magnetic Core Loss Modeling," *IEEE Applied Power Electronics Conference (APEC)*, Houston, March 2022.

[C52] Z. Zheng, P. Kumar, Y. Chen, H. Cheng, S. Wagner, **M. Chen**, N. Verma, and J. C. Sturm, "Model-Based Control of Planar Piezoelectric Inchworm Soft Robot for Crawling in Constrained Environments," *IEEE 5th International Conference on Soft Robotics (RoboSoft)*, 2022. [🏆 IEEE RoboSoft Software for Soft Robotics, Outstanding Poster Prize]

[C51] D. H. Zhou, A. Bendory, C. Li, and **M. Chen**, "Multiphase FCML Converter with Coupled Inductors for Ripple Reduction and Intrinsic Flying Capacitor Voltage Balancing," *IEEE Applied Power Electronics Conference (APEC)*, Houston, March 2022.

[C50] Y. Elasser, J. Baek, K. Radhakrishnan, H. Gan, J. Douglas, H. Krishnamurthy, X. Li, S. Jiang, C. R. Sullivan, and **M. Chen**, "Vertical Stacked 48V-1V LEGO-PoL CPU Voltage Regulator with 1A/mm2 Current Density," *IEEE Applied Power Electron. Conf. (APEC)*, Houston, March 2022.

[C49] J. Baek, Y. Elasser, and **M. Chen**, "Vertical Stacked 48V-1V Voltage Regulator for Ultra-High-Current Microprocessors," *Open Compute Project (OCP) Future Technologies Symposium*, San Jose, November 2021. [🏆 OCP Future Technologies Symposium Best Paper Award]

[C48] D. H. Zhou, A. Bendory, P. Wang and **M. Chen**, "Intrinsic and Robust Voltage Balancing of FCML Converters with Coupled Inductors," *IEEE Workshop on Control and Modeling of Power Electron. (COMPEL)*, Cartagena de Indias, Colombia, 2021.

[C47] P. Wang, D. H. Zhou, V. Yang and **M. Chen**, "Matrix Coupled All-in-One Magnetics for PWM Power Conversion," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Cartagena de Indias, Colombia, 2021.

[C46] E. Dogariu, H. Li, D. Serrano López, S. Wang, M. Luo and **M. Chen**, "Transfer Learning Methods for Magnetic Core Loss Modeling," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Cartagena de Indias, Colombia, 2021.

[C45] M. Liao, H. Li, P. Wang, Y. Chen and **M. Chen**, "Machine Learning Methods for Power Flow Control of Multi-Active-Bridge Converters," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Cartagena de Indias, Colombia, 2021.

[C44] T. Sen, J. Baek and **M. Chen**, "Current Balancing of Paralleled Switches in Resonant Converters with Multiphase Coupled Inductor," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Cartagena de Indias, Colombia, 2021.

[C43] J. Baek, Y. Elasser and **M. Chen**, "3D LEGO-PoL: A 93.3% Efficient 48V-1.5V 450A Merged-Two-Stage Hybrid Switched-Capacitor Converter with 3D Vertical Coupled Inductors," *IEEE Applied Power Electronics Conference (APEC)*, Phoenix, June 2021.

[C42] Y. Chen, H. Cheng, D. Giuliano and **M. Chen**, "A 93.7% Efficient 400A 48V-1V Merged-Two-Stage Hybrid Switched-Capacitor Converter with 24V Virtual Intermediate Bus and Coupled Inductors," *IEEE Applied Power Electronics Conference (APEC)*, Phoenix, June 2021.

[C41] Y. Elasser, J. Baek, C. R. Sullivan and **M. Chen**, "Modeling and Design of Vertical Multiphase Coupled Inductors with Inductance Dual Model," *IEEE Applied Power Electronics Conference (APEC)*, Phoenix, June 2021.

[C40] C. R. Sullivan and **M. Chen**, "Coupled Inductors for Fast-Response High-Density Power Delivery: Discrete and Integrated," *IEEE Custom Integrated Circuits Conference (CICC)*, April, 2021. [🏆 CICC Invited Paper]

[C39] H. Li, S. Lee, M. Luo, C. R. Sullivan, Y. Chen and **M. Chen**, "MagNet: A Machine Learning Framework for Magnetic Core Loss Modeling," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Aalborg, Denmark, 2020. [🏆 IEEE COMPEL Student Travel Award]

[C38] D. Zhou, Y. Elasser, J. Baek, C. R. Sullivan and **M. Chen**, "Inductance Dual Model and Control of Multiphase Coupled Inductor Buck Converter," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Aalborg, Denmark, 2020.

[C37] P. Wang, R. Pilawa-Podgurski, P. Krein and **M. Chen**, "Performance Limits of Differential Power Processing," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Aalborg, Denmark, 2020.

[C36] Y. Chen, D. Giuliano, and **M. Chen**, "Two-Stage 48V-1V Hybrid Switched-Capacitor Point-of-Load Converter with 24V Intermediate Bus," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Aalborg, Denmark, 2020. [🏆 IEEE COMPEL Best Paper Award]

[C35] J. Yuan, Y. Chen, Y. Yang, F. Blaabjerg and **M. Chen**, "High Frequency Multicell Cascaded QuasiSquare-Wave Boost Converter," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Aalborg, Denmark, 2020.

[C34] Y. Elasser, J. Baek, and **M. Chen**, "A Merged-Two-Stage LEGO-PoL Converter with Coupled Inductors for Vertical Power Delivery," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Detroit, 2020.

[C33] P. Wang and **M. Chen**, "Series Voltage Compensator for Differential Power Processing," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Detroit, 2020.

[C32] Y. Chen, J. Baek, and **M. Chen**, "Merged-Two-Stage Resonant and PWM Soft-Charging of Hybrid-Switched-Capacitor DC-DC Converters," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Detroit, 2020.

[C31] M. Liu, Y. Zhu, Z. Wang, and **M. Chen**, "A Hybrid Active/Passive Domino Architecture with MIMO Power Flow Control and Mixed Frequency Operation for Extended Range and Multi-Medium Wireless Power Transfer," *IEEE Applied Power Electronics Conference (APEC)*, New Orleans, 2020.

[C30] Y. Elasser, Y. Chen, M. Liu, and **M. Chen**, "A Multiway Bidirectional Multiport-AC-Coupled (MAC) Battery Balancer with Online Electrochemical Impedance Spectroscopy," *IEEE Applied Power Electronics Conference (APEC)*, New Orleans, 2020.

[C29] Y. Chen, J. Baek, and **M. Chen**, "LEGO-Boost: a Merged-Two-Stage Resonant-Switched-Capacitor Converter with High Voltage Conversion Ratio," *IEEE Applied Power Electronics Conference (APEC)*, New Orleans, 2020.

[C28] J. Baek, P. Wang, Y. Elasser, Y. Chen, S. Jiang, and **M. Chen**, "LEGO-PoL: a 48V-1.5V 300A Merged-Two-Stage Hybrid Converter for Ultra-High-Current Microprocessors," *IEEE Applied Power Electronics Conference (APEC)*, New Orleans, 2020.

[C27] J. Baek, G.-W. Moon, and **M. Chen**, "A Reverse-Feeding Hold-up Time Strategy for Two-Stage Grid-Interface PFC with a Rectifier-Coupled Boost Inductor," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Baltimore, 2019. [🏆 Milan M. Jovanovic Memorial Session]

[C26] Y. Chen, P. Wang, Y. Elasser, and **M. Chen**, "LEGO-MIMO Architecture: A Universal Multi-Input Multi-Output (MIMO) Power Converter with Linear Extendable Group Operated (LEGO) Power Bricks," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Baltimore, 2019.

[C25] P. Wang, Y. Chen, P. Kushima, Y. Elasser, M. Liu, and **M. Chen**, "A 99.7% Efficient 300 W Hard Disk Drive Storage Server with Multiport Ac-Coupled Differential Power Processing (MAC-DPP) Architecture," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Baltimore, 2019. [🏆 IEEE ECCE Best Student Demonstration Award, 1st Place]

[C24] M. Liu, P. Wang, Y. Guan and **M. Chen**, "A 13.56 MHz Multiport-Wireless-Coupled (MWC) Battery Balancer with High Frequency Online Electrochemical Impedance Spectroscopy," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Baltimore, 2019.

[C23] Y. Guan, P. Wang, M. Liu, D. Xu and **M. Chen**, "MSP-LEGO: Modular Series-Parallel (MSP) Architecture and LEGO Building Blocks for Non-isolated High Voltage Conversion Ratio Hybrid Dc-Dc Converters," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Baltimore, 2019.

[C22] J. Baek, P. Wang, S. Jiang and **M. Chen**, "LEGO-PoL: A 93.1% 54V-1.5V 300A Merged-Two-Stage Hybrid Converter with a Linear Extendable Group Operated Point-of-Load (LEGO-PoL) Architecture," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Toronto, 2019.

[C21] P. Wang, Y. Chen, Y. Elasser and **M. Chen**, "Small Signal Model for Very-Large-Scale Multi-Active-Bridge Differential Power Processing (MAB-DPP) Architecture," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Toronto, 2019.

[C20] Y. Elasser, Y. Chen, P. Wang and **M. Chen**, "Sparse Operation of Multi-Winding Transformer in Multiport-Ac-Coupled Converters," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Toronto, 2019.

[C19] Y. Chen, Y. Elasser, P. Wang, J. Baek and **M. Chen**, "Turbo-MMC: Minimizing the Submodule Capacitor Size in Modular Multilevel Converters with a Matrix Charge Balancer," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Toronto, 2019.

[C18] M. Liu and **M. Chen**, "Dual-Band Multi-Receiver Wireless Power Transfer: Architecture, Topology, and Control," *IEEE Applied Power Electronics Conference and Exposition (APEC)*, Los Angeles, March 2019.

[C17] Y. Chen, P. Wang, H. Li, and **M. Chen**, "Power Flow Control in Multi-Active-Bridge Converters:

Theories and Applications," *IEEE Applied Power Electronics Conference and Exposition (APEC)*, Los Angeles, March 2019. [🏆 IEEE APEC Outstanding Presentation Award]

[C16] P. Wang, Y. Chen, and **M. Chen**, "A 99.7% Efficient Series-Stacked Architecture for Rack-Level Power Delivery in HDD Storage Servers," *OCP Annual Symposium*, San Jose, March 2019.

[C15] P. Wang and **M. Chen**, "Towards Power FPGA: Architecture, Modeling and Control of Multiport Power Converters," *IEEE Workshop on Control and Modeling of Power Electronics (COMPEL)*, Padua, Italy, June 2018.

[C14] M. Liu and **M. Chen**, "Dual-Band Multi-Receiver Wireless Power Transfer with Reactance Steering Network," *IEEE PELS Workshop on Emerging Technologies: Wireless Power (WoW)*, Montreal, Canada, June 2018.

[C13] **M. Chen**, S. Chakraborty, D. J. Perreault, "Multitrack Power Factor Correction Architecture," *IEEE Applied Power Electronics Conference and Exposition (APEC)*, San Antonio, TX, March 2018.

[C12] W. D. Braun, **M. Chen** and D. J. Perreault, "A switched-winding transformer with low quiescent loss to meet the level VI efficiency standard at high power density," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Cincinnati, OH, October, 2017.

[C11] **M. Chen**, "Magnetics Design and Optimization for Tapped-Series-Capacitor (TSC) Power Converters," *IEEE Workshop on Control and Modeling for Power Electronics (COMPEL)*, Stanford, CA, July, 2017.

[C10] Y. Tang, **M. Chen**, and L. Ran, "A Compact Modular Multilevel Converter (MMC) Submodule Structure with Reduced Capacitance Based on Stacked Switched Capacitor (SSC) Architecture," *IEEE Applied Power Electronics Conference and Exposition (APEC)*, Long Beach, CA, 2016.

[C9] S. Gunter, **M. Chen**, S. A. Pavlick, R. Abranson, K. K. Afridi, and D. J. Perreault, "Applicability and Limitations of a *M2Spice*-assisted Time-Domain Current Calculation and Visualization Approach for Planar Magnetics," *IEEE Applied Power Electronics Conference and Exposition (APEC)*, Long Beach, CA, March, 2016. [🏆 IEEE APEC Outstanding Presentation Award]

[C8] **M. Chen**, K. K. Afridi, S. Chakraborty, and D. J. Perreault, "A High-Power-Density Wide-Input-Voltage-Range dc-dc Converter having a MultiTrack Architecture," *IEEE Energy Conversion Congress and Exposition (ECCE)*, Montreal, Canada, September, 2015.

[C7] **M. Chen**, S. Pradeep, and J. Morroni, "A Series-Capacitor Tapped Buck Converter (SC-TaB) for Regulated High Voltage Conversion Ratio Dc-Dc Applications," *IEEE Energy Conversion Congress and Exposition (ECCE)*, pp. 3650–3657, Pittsburgh, PA, September, 2014.

[C6] **M. Chen**, Y. Ni, C. M. Serrano, B. J. Montgomery, D. J. Perreault, and K. K. Afridi, "An Electrolytic-Free Offline LED Driver with a Ceramic-Capacitor-Based Compact SSC Energy Buffer," *IEEE Energy Conversion Congress and Exposition (ECCE)*, pp. 2713–2718, Pittsburgh, PA, September, 2014. [🏆 IEEE ECCE Best Student Demonstration Award, 1st Place]

[C5] **M. Chen**, M. Araghchini, K. K. Afridi, J.H. Lang, C. R. Sullivan, and D. J. Perreault, "A Systematic Approach to Modeling Impedances and Current Distribution in Planar Magnetics," *IEEE Workshop on Control and Modeling for Power Electronics (COMPEL)*, pp. 1–17, Santander, Spain, June, 2014.

[C4] Y. Ni, S. Pervaiz, **M. Chen**, and K. K. Afridi, "Energy Density Enhancement of Unipolar SSC Energy Buffers through Capacitance Ratio Optimization," *IEEE Workshop on Control and Modeling for Power Electronics (COMPEL)*, pp. 1–8, Santander, Spain, June, 2014.

[C3] **M. Chen**, K. K. Afridi, and D. J. Perreault, "A Multilevel Energy Buffer and Voltage Modulator for Grid-Interfaced Micro-inverters," *IEEE Energy Conversion Congress and Exposition (ECCE)*, pp. 3070–3080, Denver, CO, September, 2013.

[C2] K. K. Afridi, **M. Chen**, and D. J. Perreault, "Enhanced Stacked Switched Capacitor Energy Buffer Architecture," *IEEE Energy Conversion Congress and Exposition (ECCE)*, pp. 4209–4216, Raleigh, NC, September, 2012.

[C1] **M. Chen**, K. K. Afridi, and D. J. Perreault, "Stacked Switched Capacitor Energy Buffer Architecture," *IEEE Applied Power Electronics Conference and Exposition (APEC)*, pp. 1404–1413, Orlando, FL, February, 2012.

Issued Patents

[P9] **M. Chen**, Robert Pilawa-Podgurski, "System and Method for Power Converter Interfacing with Multiple Series-Stacked Voltage Domains," US Patent No. 11,870,366, issued 01/09/2024.

[P8] **M. Chen**, Y. Chen, D. Giuliano, "Power Converter," US Patent No. 11,764,669, issued 09/19/2023.

[P7] **M. Chen**, M. Liu, "System and Method for Reactance Steering Network (RSN)", US Patent No. 11,258,306, issued 02/22/2022.

[P6] **M. Chen**, K. K. Afridi, D. Perreault, "Coupled Split Path Power Conversion Architecture", US Patent No. 10,644,503, issued 03/03/2020.

[P5] **M. Chen**, D. J. Perreault, K. K. Afridi, S. B. Leeb and A. H. C. Chang, "Stacked Switched Capacitor Energy Buffer Circuit," U.S. Patent No. 10,218,289, issued 02/26/2019.

[P4] **M. Chen**, K. K. Afridi, Y. Ni, C. Serrano, B. Montgomery, D. Perreault, S. Pervaiz, "Stacked Switched Capacitor Energy Buffer Circuit", US Patent No. 10,205,400, issued 11/12/2019.

[P3] **M. Chen**, K. K. Afridi, D. J. Perreault, "Switched-Capacitor Split Drive Transformer Power Conversion Architecture," US Patent No. 9,825,545, issued 11/21/2017.

[P2] **M. Chen**, D. J. Perreault, K. K. Afridi, S. B. Leeb, and A. H. C. Chang, "Systems Approach to Photovoltaic Energy Extraction," US Patent No. 9,407,164, issued 08/02/2016.

[P1] **M. Chen**, D. J. Perreault, K. K. Afridi, S. B. Leeb, and A. H. C. Chang, "Stacked Switched-Capacitor Energy Buffer Architecture," US Patent No. 9,374,020, issued 06/21/2016.

Example Research Projects

· Total: about 8 million USD
· PI Share: about 6 million USD
· ⟳: ongoing project
· ✔: completed project

[F30] **Texas Instruments**, Gift, "Vertical Power Delivery Research Grant," 2024-2026, $240,000 ⟳

[F29] **ITG Electronics**, PI, "Research on Magnetics for Vertical Power Delivery and Material Characterization," 2024-2026, $300,000 ⋮⋮

[F28] **pSemi Corporation**, PI, "Research on High Performance FCML DC-DC Converters with Coupled Magnetics," 2024-2026, $450,000 ⋮⋮

[F27] **NSF**, PI, "Hybrid Analytical and Data-Driven Models for Integrated Simulation and Design of Complex High Frequency Multi-Winding Magnetic Components," 2024-2026, $338,926 ⋮⋮

[F26] **NSF**, co-PI, "ASCENT: From sensors to multiscale digital twin to autonomous operation of resilient electric power grids," 2024-2026, $1,500,000 (share: $250,000) ⋮⋮

[F25] **Enphase**, Gift, "for Research Activities in High Frequency Magnetics," 2023, $10,000 ⋮⋮

[F24] **Google**, Gift, "for IEEE PELS-Google-Tesla-Princeton MagNet Challenge", 2023, $10,000 ⋮⋮

[F23] **TSMC Innovation Grant**, PI, "Architecture and Magnetics for Vertical Power Delivery in Very High Density Chiplet Systems," 2023-2026, $450,000 ⋮⋮

[F22] **Princeton Andlinger Center Grant for Innovative Research**, PI, "Systems Methods Toward Sustainable Electronics", 2023-2025, $300,000 ⋮⋮

[F21] **Princeton E. Lawrence Keyes, Jr./Emerson Electric Co. Junior Faculty Award**, PI, $50,000 ⋮⋮

[F20] **Semiconductor Research Corporation (SRC)**, PI, "PMIP: Power-Magnetics-in-Package Technology for Ultra-Compact Vertical 48V-1V CPU Voltage Regulators," 2022-2025, $270,000 ⋮⋮

[F19] **ARPA-E GAMOW**, co-PI, "Wide Band Gap Semiconductor Amplifiers for Plasma Heating and Control," 2020-2023, $1,100,000 (share: $300,000) ✔

[F18] **NSF CAREER**, PI, "Granular Power Electronics at the Grid Edge," 2019-2024. $500,000 ✔

[F17] **EnaChip & Princeton Industrial Collaboration Fund**, PI, "Circuits and Integrated Magnetics for Vertical Power Delivery of Microprocessors and IoT Devices, " 2021-2023. $250,000 ✔

[F16] **American Tower Corporation**, PI, "Next Generation Power Delivery Architecture with Integrated Photovoltaic and Distributed Battery UPS for Telecom Towers at the Edge," 2020-2023, $270,000 ✔

[F15] **Princeton Campus-as-Lab**, PI, "Princeton Andlinger Distributed Energy and Power Testbed," 2019-2020, $125,000 ✔

[F14] **ONR STTR**, sub-contract, "Ultra-Compact Power Electronics for Aerospace Compressor Applications," with Bascom Hunter Technologies, Inc., 2021-2022, $70,000 ✔

[F13] **ARPA-E DIFFERENTIATE**, PI, "MLSPICE: Machine Learning based SPICE Modeling Platform for Power Magnetics," 2020-2022, $720,000 ✔

[F12] **ARPA-E CIRCUITS**, co-PI, "Extreme Efficiency 240 V_{AC} to Load Data Center Power Delivery Topologies and Control," 2018-2021, $1,230,926 (share: $320,000) ✔

[F11] **Google & Intel**, PI, "Architecture, Magnetics, and 3D Packaging of a Merged-Two-Stage 54V-to-1.8V Point-of-Load Converter," 2019-2022, $600,000 ✔

[F10] **pSemi Corporation**, PI, "PoL Converters and Architectures with Deep Cycled Switched Capacitors and Machine-Learning Guided Coupled Inductor Design," 2020-2023, $300,000 ✔

[F9] **C3.ai DTI Research Grant**, PI, "Machine Learning for Power Electronics-enabled Power Systems: A Unified ML Platform for Power Electronics, Power Systems, and Data Science," 2021-2022, $250,000 ✔

[F8] **Princeton CSML DataX Innovation Fund**, PI, "MagNet: Transforming Power Magnetics Design with Machine Learning Tools and SPICE Simulations," 2021-2022, $103,737 ✔

[F7] **Siebel Energy Institute**, PI, "Developing a Smart Energy Router for Flexible and Efficient DC Power Distribution in Smart Homes and Buildings," 2017-2018, $50,000 ✔

[F6] **American Tower Corporation**, co-PI, "Engineering the Invisible: Probing the Limits of Solar Powered Com-Towers," 2017-2018, $75,000 ✔

[F5] **Power Survey Company**, co-PI, "Impacts of High Impedance Faults on Low-Voltage Electricity Distribution in the UK," 2017-2018, $10,000 ✔

[F4] **Princeton Keller Center**, PI, "Ultra Efficient EPUs for Future Data Centers," 2019, $30,000

[F3] **Princeton E-ffiliates**, PI, "Multi-Input Multi-Output (MIMO) Bi-directional DC Power Delivery Architecture for Smart Homes," 2017-2018, $150,000 ✔

[F2] **Princeton SEAS Innovation Award**, PI, "Developing Compact and Efficient 'LEGO Bricks' to Power Future Microprocessors," 2019-2020, $90,000 ✔

[F1] **Princeton Andlinger Center**, co-PI, "Electrification of Transportation for Energy Storage and Smart Mobility," 2017-2018, $300,000 (share: $75,000) ✔

BOOK CHAPTERS AND TECHNICAL REPORTS

[T3] E. Larson and **M. Chen**, *Analysis of Contact-Voltage Losses in Low-Voltage Electricity Distribution Systems of the U.K.*, Princeton Andlinger Center for Energy and the Environment & UKPN, December, 2018.

[T2] L. Golston, G. Davies, R. Edwards, M. Miller, M. Momen, T. Nealon, E. Bou-Zeid, **M. Chen**, M. O.L. Hansen, M. Hultmark, R. Socolow, *Wind Power: An Energy Technology Distillate*, Princeton Andlinger Center for Energy and the Environment, December, 2018.

[T1] J. G. Kassakian, R. L. Schmalensee, G. DesGroseilliers, T. D. Heidel, K. K. Afridi, A. M. Farid, J. M. Grochow, W. W. Hogan, H. D. Jacoby, J. L. Kirtley, H. G. Michaels, I. Pérez Arriaga, D. J. Perreault, N. L. Rose, G. L. Wilson, N. Abudaldah, **M. Chen**, P. E. Donohoo, S. J. Gunter, P. J. Kwok, V. A. Sakhrani, J. Wang, A. Whitaker, X. L. Yap, and R. Y. Zhang, *The Future of the Electric Grid*, MIT Energy Initiative, December, 2011.

INVITED SEMINARS

[S63] "Power Electronics Turing Test: A Path Toward Strong AI in Power Electronics,"
Lahore University of Management Sciences, COMPEL'24, Lahore, Pakistan, June 27, 2024.

[S62] "Granular Architecture and Magnetics for Advanced Power Conversion,"
Georgia Institute of Technology, IEEE PELS Distinguished Lecturer Seminar, April 11, 2024.

[S61] "Power Electronics for Sustainability and Sustainable Power Electronics,"
Princeton University, Princeton Materials Institute Annual Meeting, April 5, 2024.

[S60] "Granular Architecture and Magnetics for Advanced Power Conversion,"
IEEE Power Electronics Society Webinar Series, Host: Prof. Luca Corradini, January 11, 2024.

[S59] "Advanced Power Electronics for High Performance Computing,"
GE Research EDGE Symposium, Host: Dr. Michael Englert, September 19, 2023.

[S58] "Advanced Models and Methods for Multiport Power Conversion and Magnetics,"
Hitachi Energy, Host: Dr. Ghanshyamsinh Gohil, August 25, 2023.

[S57] "Granular Architecture and Magnetics for Advanced Power Conversion,"
Virginia Tech CPES Arlington Center, Host: Prof. Dong Dong, July 20, 2023.

[S56] "Granular Architecture and Magnetics for Miniaturized Power Conversion,"
The University of Macau, Host: Prof. Chi-Seng Lam, Distinguished Lecturer Seminar Series,
State Key Laboratory of Analog and Mixed-Signal VLSI, July 5, 2023.

[S55] "Panel discussion - Green & cost-effective tech: can Europe have both?,"
POLITICO Europe Tech Summit, Host: Pieter Haeck, Brussel, Belgium, April 26, 2023.

[S54] "From Chip-Edge to Grid-Edge: High Frequency Granular Power Electronics for High Performance Computing and Renewable Energy,"
ETH-Zürich, Host: Prof. Christian Franck, Zürich, Switzerland, April 19, 2023.

[S53] "From Chip-Edge to Grid-Edge: Power Electronics as an Enabling Technology for Sustainable Development of Human Society,"
Harvard University, Host: Prof. Gu-Yeon Wei, Cambridge, MA, March 8, 2023.

[S52] "Design Considerations for 48V-VRM: Architecture, Magnetics, and Performance Tradeoffs,"
Florida International University, 3D-PEIM Invited Talk, Miami, FL, February 3, 2023.

[S51] "Architecture and Magnetics for Granular Power Conversion,"
MIT, Host: Prof. David Perreault, Cambridge, MA, December 16, 2022.

[S50] "Miniaturized LEGO Point-of-Load Power Architecture,"
Intel Labs, Host: Dr. Jonathan Douglas, Phoenix, AZ, December 15, 2022.

[S49] "Architecture and Magnetics for Granular Power Conversion,"
Arizona State University, Host: Prof. Michael Ranjram, Tempe, AZ, December 14, 2022.

[S48] "Princeton University Energy Association Annual Energy Conference,"
Princeton University, Princeton, NJ, December 3, 2022.

[S47] "Unlock the Power of Granular Power Conversion for Performance and Miniaturization,"
pSemi Corporation, Host: Dr. Ibrahim Sezan, San Clara, CA, November 9, 2022. [online]

[S46] "Unlock the Power of Granular Power Conversion for Performance and Miniaturization,"
Cornell University, Host: Prof. Khurram Afridi, Ithaca, NY, September 30, 2022.

[S45] "Architecture, Magnetics, and Performance Bottlenecks for 48V-1V CPU VRM,"
TSMC, Host: Dr. Shenggao Li, San Jose, CA, August 16, 2022. [online]

[S44] "Hybrid Switched Capacitor Circuits and Magnetics for High Performance Power Delivery," **Intel Labs**, Host: Dr. Kaladhar Radhakrishnan, Phoenix, AZ, June 24, 2022. [online]

[S43] "Advanced Power Management for Future Telecom Towers," **Analog Devices**, Host: Dr. Chris Mayer, June 13, 2022. [online]

[S42] "Princeton MagNet Project: Machine Learning Methods for Power Magnetics Modeling," **Aalborg University**, Host: Prof. Frede Blabbjerg, Aalborg, Denmark, June 8, 2022.

[S41] "Magnetics Modeling and Circuit Architecture for High Performance Power Electronics," **Polytechnic University of Madrid**, Host: Prof. Pedro Alou, Madrid, Spain, June 6, 2022.

[S40] "Hybrid Switched Capacitor Circuits and Magnetics for High Performance Power Delivery," **EPFL**, Host: Prof. Drazen Dujic, Lausanne, Switzerland, June 3, 2022.

[S39] "Architecture and Magnetics, and Performance Bottlenecks for 48V-1V Power Conversion," **ETH-Zürich**, Host: Prof. Johann W. Kolar, Zürich, Switzerland, June 2, 2022.

[S38] "Hybrid Switched Capacitor Circuits and Magnetics for High Performance Power Delivery," **Fraunhofer IISB**, Host: Dr. Bernd Wunder, Nuremburg, Germany, May 31, 2022.

[S37] "Hybrid Switched Capacitor Circuits and Magnetics for High Performance Power Delivery," **RWTH Aachen University**, Host: Prof. Rik De Doncker, Aachen, Germany, May 30, 2022.

[S36] "Hybrid Switched Capacitor Circuits and Magnetics for High Performance Power Delivery," **University of Colorado Boulder**, Host: Prof. Dragan Maksimovic, Boulder, CO, May 24, 2022.

[S35] "Hybrid Switched Capacitor Circuits and Magnetics for High Density Power Delivery," **IEEE Custom Integrated Circuits Conference (CICC)**, Newport Beach, CA, April 24, 2022.

[S34] "Power Electronics Design Methods and Artificial Intelligence," Rap Session **IEEE Applied Power Electronics Conference (APEC)**, Houston, TX, March 22, 2022. [🎤 Panelist]

[S33] "Power Electronics for High Performance Computing - Opportunities and Challenges," **IEEE Applied Power Electronics Conference (APEC)**, Houston, TX, March 22, 2022. [🎤 Chair]

[S32] "Extreme Performance 48V-1V Power Delivery for Ultra High Current Microprocessors," **Columbia University**, Host: Dr. Xin Zhang, New York City, NY, December 5, 2021. (virtual)

[S31] "The Future of Mobility: Decarbonizing Transportation for Net-Zero 2050," **Princeton Engage**, Princeton, NJ, December 2-3, 2021. (virtual)

[S30] "Machine Learning Methods for Power Magnetics Modeling," **European Center for Power Electronics**, Graz, Austria, December 2-3, 2021. (virtual)

[S29] "Extreme Performance 48V-1V Power Delivery for Ultra High Current Microprocessors," **Nvidia Research**, Santa Clara CA, November 18, 2021. (virtual)

[S28] "Managing Power Complexity for Performance: Circuit, Architecture, and Magnetics," *International Symposium on Power Electronics (*Ee*)*, Novi Sad, Serbia, Oct. 28, 2021. (virtual) [🎤 keynote]

[S27] "Extreme Performance 48V-1V Power Delivery for Ultra High Current Microprocessors,"
*International Power Supply On Chip Workshop (***PwrSoC***)*, University of Pennsylvania, Philadelphia, PA, October 24-27, 2021. [🎤 keynote]

[S26] "Special Session: Power Electronic Technologies for Distributed Energy Resources,"
*IEEE Energy Conversion Congress and Expo (***ECCE***)*, Vancouver, Canada, Oct. 10, 2021. (virtual)

[S25] "Power Architecture and Magnetics to Unlock the Potential of WBG Semiconductors,"
Polytechnic University of Madrid, Madrid, Spain, June 24, 2021. (virtual)

[S24] "Traditional and Machine-Learning based Magnetic Core Loss Modeling,"
PSMA *Power Technology Roadmap Webinar*, April 15, 2021. (virtual)

[S23] "Design Methodologies for High Frequency Multiwinding Magnetics: from Fundamental Principles to Design Tools,"
IEEE PELS **DMC** *Webinar Series*, January 21, 2021. (virtual)

[S22] "Power Electronics for High Performance Computing: Architecture, Topology, Magnetics,"
ETH-Zürich, Host: Prof. Johann W. Kolar, August 10, 2020. (virtual)

[S21] "Data Infrastructure at the Edge: Energy and Infrastructure,"
American Tower *Power and Energy Workshop*, Boston, MA, June 2, 2020. (virtual) [🎤 keynote]

[S20] "Architecture, Magnetics, and 3D Packaging of a Merged-Two-Stage Point-of-Load Converter"
Google/Intel *Sponsored Research Project Annual Meeting*, May 29, 2020. (virtual)

[S19] "MLSPICE: Machine Learning based SPICE Modeling Platform for Power Magnetics,"
ARPA-E *DIFFERENTIATE Program Kickoff Meeting*, April 29, 2020. (virtual)

[S18] "Modeling and Design of Multiwinding Planar Magnetics for High Performance Power Electronics,"
IEEE **PSMA** *Magnetics Workshop*, New Orleans, LA, March 14, 2020. (virtual)

[S17] "Academic Perspective on OCP Symposium,"
OCP *Future Technologies Symposium*, San Jose, CA, March 2, 2020. (virtual) [🎤 keynote]

[S16] "Extreme Efficiency 240 Vac to Load Data Center Power Delivery Topologies,"
ARPA-E CIRCUITS *Program Annual Review*, Los Angeles, CA, January 31, 2020.

[S15] "High Frequency Power Electronics at the Grid Edge: Opportunities and Challenges,"
NSF *Workshop on Power Electronics-Enabled Operation Of Power Systems*, Chicago, CA, October 31, 2019.

[S14] "Ultra-High-Performance Power Electronics for Data Center Power Delivery,"
GE Electrification Symposium, GE **Global Research**, Albany, NY, September 18, 2019.

[S13] "Rapid Switch Discussion Panel: Techno-Economic Bottlenecks,"
Princeton Andlinger *E-ffiliates Annual Retreat*, Princeton, NJ, June 11, 2019.

[S12] "Power Delivery Architecture in Future Data Centers,"
Data Center Dynamics (DCD), New York City, NY, April 10, 2019. [🎤 keynote]

[S11] "Extreme Efficiency 240 Vac to Load Data Center Power Delivery Topologies and Control,"
ARPA-E CIRCUITS *Program Annual Review*, New Orleans, LA, January 31, 2019.

[S10] "Architecture, Magnetics, and 3D Packaging of a Merged-Two-Stage 54V-to-1.8V Point-of-Load Converter,"
Google/Intel *Technical Webinar*, August 1, 2018.

[S9] "Smart Power Electronics at the Grid Edge,"
Princeton Andlinger *E-ffiliates Annual Retreat*, Princeton, NJ, June 14, 2018.

[S8] "Fast Charging and High Performance Power Conversion,"
Princeton Andlinger *E-ffiliates Partnership Annual Meeting*, Princeton, NJ, November 10, 2017.

[S7] "Managing Electricity for the Future World,"
ExxonMobil *Global Longer Range Research Meeting*, Princeton, NJ, May 9, 2017. [🎤 keynote]

[S6] "Hybrid Switched-Capacitor Magnetics Power Conversion Architecture,"
IEEE **PELS** *Webinar Series*, August 25, 2016.

[S5] "Next Generation Power Electronics for Important Applications,"
University of California, San Diego, March 17, 2016.
Harvard University, March 9, 2016.
Texas A&M University, March 2, 2016.
University of Pennsylvania, February 23, 2016.
University of Washington, Seattle, February 18, 2016.
Princeton University, February 9, 2016.

[S4] "Towards Miniaturized High-Performance Power Electronics,"
Princeton University, Princeton, NJ, December 14, 2015.

[S3] "Merged Multi-Stage Power Conversion"
Dartmouth College, Hanover, NH, May 28, 2015.

[S2] "A Systematic Approach to Modeling Impedances and Current Distribution in Planar Magnetics,"
Qualcomm Inc., San Diego, CA, January 15, 2015.

[S1] "Stacked Switched Capacitor Energy Buffer Architecture,"
Texas Instruments, Dallas, TX, July 19, 2013.

Teaching

· Spring 2024, Princeton ENE 273 – Renewable Energy and Smart Grids
· Fall 2023, Princeton ENE 581 – Advanced Power Electronics [🏆 Outstanding Teaching]
· Spring 2023, Princeton ENE 373 – Electric Energy: from Electronics to the Grid
· Spring 2022, Princeton ENE 273 – Renewable Energy and Smart Grids
· Fall 2021, Princeton ELE 481/581 – Principles of Power Electronics [🏆 Outstanding Teaching]
· Summer 2021, Princeton ACEE Undergraduate Summer Research Program
· Spring 2021, Princeton ENE 273 – Renewable Energy and Smart Grids
· Fall 2020, Princeton ELE 481/581 – Principles of Power Electronics [🏆 Outstanding Teaching]
· Fall 2019, Princeton ELE 481/581 – Principles of Power Electronics

· Summer 2019, Princeton ACEE Undergraduate Summer Research Program
· Spring 2019, Princeton ELE 481/581 – Principles of Power Electronics [🏆 Outstanding Teaching]
· Fall 2018, Princeton ENE 273 – Renewable Energy and Smart Grids
· Summer 2018, Princeton ACEE Undergraduate Summer Research Program
· Spring 2018, Princeton ELE 481/581 – Principles of Power Electronics
· Fall 2017, Princeton ENE 273 – Renewable Energy and Smart Grids
· Summer 2017, Princeton ACEE Undergraduate Summer Research Program
· Spring 2017, Princeton ELE 481/581 – Principles of Power Electronics
· Spring 2016, MIT 6.334 – Power Electronics
· Spring 2013, MIT 6.334 – Power Electronics
· Summer 2016, MIT Undergraduate Research Opportunities Program (UROP)

Student Advising

· **Postdoctoral Researchers**: Steven Zeng, Gyeong-Gu Kang, Jae-Il Baek, Yufei Li, Diego Serrano, Ming Liu, Yenan Chen
· **Graduate Students**: Ping Wang, Youssef Elasser, Haoran Li, Daniel Zhou, Tanuj Sen, Mian Liao, Hsin Cheng, Shukai Wang, Konstantinos Manos, Davit Grigoryan, Elias Veilleux, Hyukjae Kwon
· **Visiting Students**: Yang Wu, Hanyu Liu, Jake Segal, Chenxi Zhang, Joe Li, Hanyu Liu, Yueshi Guan, Haoran Li, Zachary Wang, Yikang Xiao, Jing Yuan, Anthony Zai, Wali Afridi
· **Undergraduate Research Advisees**: Wonju Lee, Edward Deleu, Alex Ni, Sekinat M. Aliu, Linda Chen, Camille Y. Sevrain, Thomas J. Atwood, Isaac W. Owen, Katherine Graham, Aneesha Manocha, Thomas Pries, Diane Yang, David Shustin, Daniel Simone, Daniela Vita, Abigail S. McRea, Annie Lin, Pranav Avva, Vinay Konuru, Petru Cotrut, Cindy Li, Vincent Yang, Evan Dogariu, Avi Bendory, Eric Dogariu, Ryan Lee, Hoang Le, Ellie Shapiro, Abdulghafar Al Tair, Alex Ju, Fida Newaj, Yuqing Zhu, Obinna Umeh, Hyunsun Heidi Kim, Parker Kushima, Alexander Asante, Joyce R. Kimojino
· **Undergraduate Academic Advisees**: Warda Aftab, Blake Brown, Cynthia Zhang, Misael Rosero, Aarush Goradia, Anthony Implicito, Jan Iyer, Erik Lawani, Daniel Li, Youssef Abdelkader, Ryan Salik, Shail Patel, Samuel Otieno Gariy, Kyu Han, Kim Conner, Gabriel Derek Laniewski, Phoebe Lin, Reilly Deirdre McClanahan, Brendan McManamon, Anca Maria Negoiu, Akash Ranjan Pattnaik, Hari Santhanam, Hitesha Kamal Ukey, Brendan Y. Wang, Sophie Yangyi, Hadley Clayton, Ben Finch, Danxian Liu. Aneesha Manocha, Thomas Pries, Arielle Rivera, Diane Yang, and ...
· **Undergraduate Student Group**: Princeton Racing Electric (PRE), Princeton University Energy Association (PUEA)
· **Graduate Student Group**: Princeton CIRCUITS Student Group
· **Ph.D. Thesis Committee**: Junnan Hu (Princeton), Mohammad Daryaei (U. Alberta), Jinseok Lee (Princeton), Zhiwu Zheng (Princeton), Zhuozhi Yao (Princeton), Nathan Brooks (Berkeley), Zheng Liu (Princeton), Saeidi Hooman (Princeton), Hongyang Jia (Princeton), Richard Brun Jr. (Princeton), Janko Celikovic (CU Boulder), Chengjie Zhu (Princeton), Yue Ma (Princeton), Vladan Lazarevic (UPM), Peter Deaville (Princeton), Larry Thul (Princeton), Zitao Liao (Berkeley), Can Wu (Princeton), Hongyang Jia (Princeton), Jannik Schäfer (ETH Zurich), Yoni Mehlman (Princeton), Lianfeng Zhao (Princeton), Lingyu Hong (Princeton), Xuyang Lu (Princeton), Joe Durante (Princeton), Hossein Valavi (Princeton), Xue Wu (Princeton), Chandrakanth Reddy Chappidi (Princeton), Abdullah Guler (Princeton), Andrew Kim (Princeton), Lianfeng Zhao (Princeton), Jintao Zhang (Princeton), Qi Zhang (Princeton), Ji Qi (Princeton), Harvey Cheng (Princeton), Tiffany T. Moy (Princeton), Yutian Lei (UIUC)

· **Ph.D. General Exam Committee**: Zhiwu Zheng (Princeton), Zheng Liu (Princeton), Saeidi Hooman (Princeton), Chengjie Zhu (Princeton), Emir Ali Karahan (Princeton), Peter Deaville (Princeton), Prakhar Kumar (Princeton), Prerit Terway (Princeton), Zitao Liao (Berkeley), Cindy Pan (Princeton), Xiaoyang Ma (Princeton)

Postdoc and Graduate Alumni

· Dr. Youssef Elasser – Research Scientist, Nvidia, California, USA (2024)
· Dr. Ping Wang – Research Scientist, Huawei Digital Energy, Shenzhen, China (2023)
· Dr. Diego Serrano – Senior Engineer, Wolfspeed, North Carolina, USA (2022)
· Dr. Jaeil Baek – Analog Design Engineer, Intel, Arizona, USA (2022)
· Prof. Yenan Chen – Associate Professor, Zhejiang University, China (2021)
· Prof. Ming Liu – Associate Professor, Shanghai Jiaotong University, China (2020)
· Dr. Jing Yuan – Postdoc Research Associate, Aalborg University, Denmark (2020)
· Prof. Yueshi Guan – Associate Professor, Harbin Institute of Technology, China (2019)

Selected Undergraduate Student Awards

· Daniel Simone - Bradley Dickinson Award for System Design in Electrical Engineering (2024)
· Edward Deleu - Best Undergraduate Presentation Award, ACEE Annual Meeting (2023)
· Aneesha Manocha - Charles Ira Young Memorial Tablet & Medal (2023)
· Aneesha Manocha - Churchill Scholarship (2023)
· Petru Cotrut - Hisashi Kobayashi Prize in Electrical Engineering (2022)
· Evan Dogariu - Best Undergraduate Presentation Award, ACEE Annual Meeting (2021)
· Alex Ju - John Ogden Bigelow, Jr. Prize in Electrical Engineering (2020)
· Princeton Racing Electric - 2nd Place, International Formula Hybrid Competition (2017, 2018, 2019)
· Princeton Racing Electric - IEEE Excellence in Electric Vehicle Engineering Award (2018, 2019)

Selected Postdoc & Graduate Student Awards

· Shukai Wang & Tanuj Sen & Mian Liao - IEEE APEC Outstanding Presentation Award (2024)
· Shukai Wang - Best Graduate Presentation Award, ACEE Annual Meeting (2023)
· Haoran Li & Shukai Wang - First Place, IEEE ECCE Student Demo Software Track (2023)
· Hsin Cheng - IEEE IROS Best Paper Award on Robot Mechanisms and Design, Finalist (2023)
· Daniel Zhou - Princeton SEAS Honorific Fellowship (2023)
· Daniel Zhou - IEEE PELS John G. Kassakian Fellowship (2023)
· Hanyu Liu - IEEE PELS John G. Kassakian Fellowship (2023)
· Daniel Zhou - Princeton SEAS Award for Excellence (2023)
· Mian Liao - New Jersey Economic Development Authority Wind Institute Fellowship (2023)
· Tanuj Sen - Princeton ECE Graduate Student Outstanding Teaching Award (2023)
· Hsin Cheng - IEEE COMPEL Travelling Grant for Outstanding Student Paper (2023)
· Shukai Wang & Tanuj Sen - IEEE APEC Outstanding Presentation Award (2023)
· Daniel Zhou & Mian Liao - IEEE EPS/PSMA 3D-PEIM Rao R. Tummala Best Paper Award (2023)
· Daniel Zhou - Princeton ECE Graduate Student Excellence in Service Award (2022)
· Daniel Zhou - IEEE COMPEL Travelling Grant for Outstanding Student Paper (2022)
· Zhiwu Zheng - IEEE-RAS ICRA Bio-inspired Robotics Systems, Best Poster Award (2022)
· Zhiwu Zheng - IEEE-RAS RoboSoft Software for Soft Robotics, Outstanding Poster Prize (2022)
· Hsin Cheng - IEEE APEC Outstanding Presentation Award (2022)

· Ping Wang - IEEE APEC Outstanding Presentation Award (2022)
· Youssef Elasser & Jaeil Baek - Best Paper Award, OCP Future Technologies Symposium (2021)
· Youssef Elasser & Ping Wang - 1st Place, IEEE ECCE Best Student Demonstration Award (2021)
· Haoran Li & Shukai Wang & Mian Liao - Honorable Mention, IEEE ECCE Student Demo (2021)
· Daniel Zhou - NSERC Alexander Graham Bell Canada Graduate Scholarship (2021)
· Youssef Elasser - NSF Graduate Fellowship (2020)
· Ping Wang - Yan Huo *94 Fellowship (2020)
· Yenan Chen, Youssef Elasser, Ping Wang - Princeton Innovation Forum 1st Place (2019)
· Yenan Chen - Best Postdoctoral Presentation Award, ACEE Annual Meeting (2019)
· Ming Liu - AirFuel Research Excellence Award (2019)
· Ping Wang & Jing Yuan - 1st Place, IEEE ECCE Best Student Demonstration Award (2019)
· Yenan Chen - IEEE APEC Outstanding Presentation Award (2019)
· Samantha Gunter - IEEE APEC Outstanding Presentation Award, IEEE APEC (2016)
· Saad Pervaiz & Yu Ni - 1st Place, IEEE ECCE Best Student Demonstration Award (2014)

ACADEMIC SERVICES

Princeton University
· *Associate Director, Energy track, Program in Technology & Society Certificate*
· *Member, Keller Center Entrepreneurship Certificate Executive Committee*
· *Faculty Advisor, Princeton Racing Electric*
· *Member, ACEE Junior Faculty Search Committee*
· *Member, ACEE Senior Faculty Search Committee*
· *Member, ECE Junior Faculty Search Committee*
· *Member, ECE Graduate Committee*
· *Member, ECE Undergraduate Committee*
· *Member, ACEE YGL Planning Committee*
· *Freshmen Advisor & Faculty Fellow, Butler College*
· *Member, ECE Freshmen Advisor*
· *Member, SEAS Innovation Fund Review Committee*
· *Lead, ACEE E-ffiliates Program Annual Meeting Planning Committee*
· *Lead, ACEE Highlight Seminar Series Planning Committee*
· *Member, ACEE Funding Review Committee*
· *Member, ACEE E-ffiliate Industry Program Committee*

PROFESSIONAL SERVICES

IEEE Power Electronics Society
· *IEEE Power Electronics Society Distinguished Lecturer, 2024-2025*
· *Vice Chair, IEEE PELS TC10: Design Methodology,* 2021–present
· *Founder & Chair,* IEEE PELS MagNet Challenge, 2023
· *co-Founder & Treasurer, IEEE PELS/IAS-Princeton/Philadelphia Chapter,* 2018–present
· *Working Group Chair, IEEE International Technology Roadmap of Power Electronics for Distributed Energy Resources (ITRD),* 2020–present
Associate Editor
· *IEEE Transactions on Power Electronics,* 2018–present
· *IEEE Journal of Emerging and Selected Topics in Power Electronics,* 2018–present

Open Compute Project
· *Technical Lead, Power Delivery and Efficiency,* 2021
Technical Program Committee Chair
· *Chair, IEEE PELS MagNet Challenge,* 2023
· *Chair, IEEE Energy Conversion Congress and Exposition (ECCE),* 2023
· *Vice Chair, IEEE Energy Conversion Congress and Exposition (ECCE),* 2022
· *Chair, IEEE International Conference on DC Microgrids (ICDCM),* 2021
· *Track Chair, IEEE Design Methodology Conference (DMC),* 2021
· *Poster Chair, IEEE International Power Supply-on-Chip Workshop (PwrSoC),* 2021
· *Track Chair, IEEE Applied Power Electronics Conference (APEC),* 2019–present
· *Associate Chair, IEEE Energy Conversion Congress and Exposition (ECCE),* 2019
Technical Program Committee Member
· *Member, IEEE Applied Power Electronics Conference and Exposition (APEC),* 2019–present
· *Member, IEEE Energy Conversion Congress and Exposition (ECCE),* 2017–present
· *Member, IEEE Workshop on Control and Model. for Power Electron. (COMPEL),* 2017–present
· *Member, IEEE Workshop on Emerging Technologies: Wireless Power (WoW),* 2017–present
· *Member, IEEE Power Electronics and Application Conference and Exposition (PEAC),* 2018
Organizing Committee
· *Poster Chair, IEEE International Workshop on Power-Supply-on-Chip (PwrSoC),* 2021
· *Student Activity Chair, IEEE Energy Conversion Congress and Exposition (ECCE),* 2020
· *Member, PSMA Capacitor Committee, 2019*
· *Member, IEEE Capacitor Workshop,* 2018
· *Co-Organizer, NSF Power Electronics Workshop,* 2016
Review Panel
· *NSF*
· *European Research Council*
· *DOE-EERE*
· *ARPA-E*
· *AAAS*
· *UK Royal Society*
· *Puerto Rico Science, Technology, and Research Trust*
Reviewer
· *IEEE Transactions on Power Electronics*
· *IEEE Journal of Solid State Circuits*
· *IEEE Transactions on Energy Conversion*
· *IEEE Journal of Emerging and Selected Topics in Power Electronics*
· *IEEE Transactions on Industrial Electronics*
· *IEEE Transactions on Inductry Applications*
· *IEEE Letters on Power Electronics*
· *IEEE Industry Electronics Magazine*
· *IEEE Power Electronics Magazine*
· *IEEE Electrification Magazine*
· *IEEE Applied Power Electronics Conference and Exposition (APEC)*
· *IEEE Workshop on Control and Modeling for Power Electronics*
· *IEEE Energy Conversion Congress and Exposition (ECCE)*

· *International Journal of Electrical Power & Energy Systems*
· *IET Power Electronics*
· *IET Renewable Power Generation*
· *IET Circuits, Devices, and Systems*

Judge

· *Princeton Energy Case Competition*, 2017