

# Curriculum Vitae

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## **Fernando Mancilla–David**

Professor

Department of Electrical Engineering

College of Engineering, Design and Computing

University of Colorado Denver

### *Campus address*

1200 Larimer Street

North Classroom Building, Room 2522–B

Denver, CO 80204

## Education

### **2007**      *PhD Electrical Engineering*

- University of Wisconsin–Madison, Madison, Wisconsin
- Thesis title: “AC Link Load Flow Control in Electric Power Systems”
- Advisor: Professor Giri Venkataramanan
- GPA: 3.9/4.0

### **2002**      *MS Electrical Engineering*

- University of Wisconsin–Madison, Madison, Wisconsin
- Thesis title: “Nomograms for Simultaneous Transfer Capability”
- Advisor: Professor Fernando Alvarado
- GPA: 4.0/4.0

### **1999**      *BS Electrical Engineering*

- “Universidad Técnica Federico Santa María” (UTFSM), Valparaíso, Chile
- Thesis title: “Back up Algorithm for Power Transformer Contingency”
- Valedictorian (ranked 1<sup>st</sup>) of the 1999 electrical engineering class

## Professional experience

- 2019–**      *Professor*
- Associate Professor, July 2014–July 2019
  - Assistant Professor, August 2007–June 2014
  - University of Colorado Denver, Denver, Colorado
  - Full time faculty member of the Electrical Engineering Department
  - Teach and conduct research in energy & power systems
- 2024–2025**    *Research Fellow*
- Sabbatical leave September 2024–August 2025
  - Politecnico di Milano, Milan, Italy
  - Host: Professor Samuele Grillo
  - Modeling and control of grid-connected converters
- 2024**      *Visiting Professor*
- Summer 2024 visit
  - UTFSM University, Valparaíso, Chile
  - Host: Professor Alejandro Angulo
  - Robust models for energy systems
- 2023**      *Visiting Professor*
- Summer 2023 visit
  - ITAM University, Mexico City, Mexico
  - Hosts: Professors Romeo Ortega and Rafael Cisneros
  - Modeling and control of supercapacitor-based converters
- 2023**      *Visiting Professor*
- January 2023 visit
  - UTFSM University, Valparaíso, Chile
  - Host: Professor Alejandro Angulo
  - Modeling of photovoltaic arrays
- 2018**      *Visiting Professor*
- Summer 2018 visit
  - PUC-Rio University, Rio de Janeiro, Brazil
  - Host: Professor Alexandre Street
  - Worked on robust models for power distribution systems

- 2016–2017**    *Visiting Professor*
- Sabbatical leave August 2016–July 2017
  - PUC–Rio University, Rio de Janeiro, Brazil
  - Fulbright Scholar
  - Host: Professor Alexandre Street
  - Taught a power electronics course
  - Conducted research on optimal operation of converter–based power systems
- 2016**        *Visiting Professor*
- Summer 2016 visit
  - “ITMO University,” Saint Petersburg, Russia
  - Hosts: Professors Anton Pyrkin and Alexey Bobtsov
  - Parameters identification for photovoltaic arrays
- 2009–2014**    *Instructor for the Professional Engineer’s Exam*
- University of Colorado Denver, Denver, Colorado
  - Taught power systems and power electronics sections
- 2014**        *Visiting Professor*
- Summer 2014 visit
  - “Universidade Federal de Pernambuco,” Recife, Brazil
  - Host: Professor Francisco Neves
  - Ride–through control for photovoltaic power plants
- 2013**        *Visiting Professor*
- Summer 2013 visit
  - “Universitat Politècnica de Catalunya,” Barcelona, Spain
  - Host: Professor Oriol Gomis
  - Worked on optimal control for large–scale windfarms
- 2013**        *Visiting Professor*
- Summer 2013 visit
  - “L’Ecole supérieure d’électricité” (Supélec), Paris, France
  - Host: Professor Romeo Ortega
  - Worked on control techniques for renewable energy systems

- 2012**      *Visiting Professor*
- Summer 2012 visit
  - “Università di Roma Tre,” Rome, Italy
  - Host: Professor Alessandro Salvini
  - Worked on optimal control for grid-connected photovoltaic panels
- 2011**      *Visiting Professor*
- Summer 2011 visit
  - “Technische Universität Berlin,” Berlin, Germany
  - Host: Professor Dr.–Ing. Kai Strunz
  - Worked on modeling and control techniques for distributed energy resources
- 2010**      *Visiting Professor*
- Summer 2010 visit
  - “L’Ecole supérieure d’électricité” (Supélec), Paris, France
  - Host: Professor Romeo Ortega
  - Worked on control techniques for renewable energy systems
- 2009**      *Visiting Professor*
- Summer 2009 visit
  - “L’Ecole supérieure d’électricité” (Supélec), Paris, France
  - Host: Professor Romeo Ortega
  - Worked on control techniques for renewable energy systems
- 2008**      *Visiting Scientist*
- Summer 2008 visit
  - ABB Corporate Research, Västerås, Sweden
  - Host: Dr. Ambra Sannino
  - Worked on harmonics elimination techniques for HVDC Light technology

- 2001–2007**    *Research Assistant at the University of Wisconsin–Madison*
- Wisconsin Electric Machines and Power Electronics Consortium (WEM-PEC), 2002–2007. Worked on topological synthesis of ac/ac converters
  - Electric Power Research Institute (EPRI), 2006. Worked on EPRI-funded project “Advanced power electronics controllers for substations”
  - Power Systems Engineering Research Center (PSERC), 2001–2002. Worked on computing power transfer limits between control areas in power systems
  - Consortium for Electric Reliability Technology Solutions (CERTS), 2001. Worked on CERTS-funded project “Conversion of system limits into market signals”
- 2005**        *Visiting Scholar*
- Fall 2005 visit
  - North Carolina State University, Raleigh, North Carolina
  - Supervisor: Professor Subhashish Bhattacharya
  - Worked on modeling and control of FACTS devices
- 1999–2000**    *Software Engineer*
- Distribution Company CHILECTRA S. A., Santiago, Chile
  - Designed and implemented an algorithm to simulate load transfer in power distribution systems
- 1998**        *Lecturer*
- Merchant Marine Academy of Chile, Valparaíso, Chile
  - Taught electric circuits and electromechanical systems
- 1998**        *Summer Intern*
- Generation Company ENDESA S. A., Talca, Chile
  - Tested the protection system for a complex of five hydroelectric power plants
- 1992–1999**    *Teaching Assistant*
- UTFSM, Valparaíso, Chile
  - Head teaching assistant for the electromagnetism laboratory class

## Peer reviewed publications

### Journal papers (CU Denver students underlined)

- 2026** • [J50] O. González, M. Huerta, E. Belloni, A. Angulo, and **F. Mancilla–David**, “An Electrothermal Model of Partially–shaded Building–integrated Photovoltaic Systems,” in *IEEE Transactions on Industry Applications*, Volume 62, Issue 4, Pages 6883–6894, July 2026 (**2026 journal impact factor: 5.2**)
- 2025** • [J49] C. González, A. Angulo, and **F. Mancilla–David**, “Optimized–Pulse–Pattern Multistep Finite–Control–Set MPC with Real–Time Validation,” in *IEEE Transactions on Power Electronics*, Volume 40, Issue 9, Pages 12719–12729, September 2025 (**2025 journal impact factor: 6.600**)
- 2025** • [J48] A. Angulo, M. Huerta, and **F. Mancilla–David**, “Identification of the 11–Parameter Functional Form Model for Photovoltaic Modules using Manufacturer–Provided Ratings,” in *IEEE Transactions on Industrial Informatics*, Volume 21, Issue 6, Pages 4694–4702, June 2025 (**2025 journal impact factor: 11.700**)
- 2025** • [J47] A. Bobtsov, **F. Mancilla–David**, S. Aranovskiy and R. Ortega, “Identification of the Photovoltaic Module Dynamic Model via Dynamic Regressor Extension and Mixing,” in *IEEE Transactions on Control Systems Technology*, Volume 33, Issue 2, Pages 799–806, March 2025 (**2025 journal impact factor: 4.900**)
- 2024** • [J46] D. Zonetti, R. Ortega, R. Cisneros, A. Bobtsov, **F. Mancilla–David**, and O. Gomis–Bellmunt, “An Observer–Based Composite Identifier for On–line Estimation of the Thévenin Equivalent Parameters of a Power System,” *Asian Journal of Control*, Pages 1–13, 2024 (**2024 journal impact factor: 2.700**)
- 2024** • [J45] R. Ribeiro, A. Street, **F. Mancilla–David**, and A. Angulo, “Equivalent Reduced DC Network Models With Nonlinear Load Functions: A Data–Driven Approach,” *IEEE Transactions on Power Systems*, Volume 39, Issue 2, Pages 3021–3032, March 2024 (**2023 journal impact factor: 7.326**)

- 2024 • [J44] A. Angulo, M. Huerta, and **F. Mancilla–David**, “A Neural Network-Aided Functional Model of Photovoltaic Arrays for a Wide Range of Atmospheric Conditions,” *IEEE Transactions on Industrial Informatics*, Volume 20, Issue 2, Pages 2487–2496, February 2024 (**2024 journal impact factor: 12.300**)
  
- 2023 • [J43] D. Jiménez, A. Angulo, A. Street, and **F. Mancilla–David**, “A Closed–Loop Data–Driven Optimization Framework for the Unit Commitment Problem: A Q–Learning Approach Under Real–Time Operation,” *Applied Energy*, Volume 330, January 2023 (**2023 journal impact factor: 11.446**)
  
- 2022 • [J42] J. Sepúlveda, A. Angulo, **F. Mancilla–David**, and A. Street, “Robust Co–optimization of Droop and Affine Policy Parameters in Active Distribution Systems with High Penetration of Photovoltaic Generation,” *IEEE Transactions on Smart Grid*, Volume 13, Issue 6, Pages 4355–4366, November 2022 (**2022 journal impact factor: 8.960**)
  
- 2022 • [J41] H. Robles–Campos and **F. Mancilla–David**, “Detailed Assessment of Modulation Strategies for Hexverter–Based Modular Multilevel Converters,” *Energies*, Volume 15, Pages 1–23, March 2022 (**2022 journal impact factor: 3.004**)
  
- 2021 • [J40] N. Monshizadeh, **F. Mancilla–David**, R. Ortega, and R. Cisneros, “Nonlinear Stability Analysis of the Classical Nested PI Control of Voltage Sourced Inverters,” *IEEE Control Systems Letters*, Volume 6, Pages 1442–1447, August 2021 (**2021 journal impact factor: 2.332**)
  
- 2021 • [J39] O. Zevallos, J. da Silva, **F. Mancilla–David**, F. Neves, R. Neto, and R. Prada, “Control of Photovoltaic Inverters for Transient and Voltage Stability Enhancement,” *IEEE Access*, Volume 9, Pages 44363–44373, March 2021 (**2020 journal impact factor: 3.745**)
  
- 2021 • [J38] C. Soriano–Rangel, W. He, **F. Mancilla–David**, and R. Ortega, “Voltage Regulation in Buck–Boost Converters Feeding an Unknown Constant Power Load: an Adaptive Passivity–based Control,” *IEEE Transactions on Control Systems Technology*, Volume 29, Issue 1, Pages 395–402, January 2021 (**2021 journal impact factor: 5.312**)

- 2020 • [J37] C. Álvarez, M. López–Campos, R. Stegmaier, **F. Mancilla–David**, R. Schurch, and A. Angulo, “A Condition Based Maintenance Model Including Resource Constraints on the Number of Inspections,” *IEEE Transactions on Reliability*, Volume 69, Issue 3, Pages 1165–1176, September 2020 (**2020 journal impact factor: 2.888**)
  
- 2020 • [J36] M. Barragán–Villarejo, J. Maza–Ortega, **F. Mancilla–David**, and F. de Paula García–López, “Experimental Realisation of an AC–Link Shunt–Series Power Flow Controller ,” *IET Power Electronics*, Volume 13, Issue 12, Pages 2675–2678, September 2020 (**2020 journal impact factor: 2.839**)
  
- 2020 • [J35] C. Álvarez, **F. Mancilla–David**, P. Escalona, and A. Angulo, “A Bienstock–Zuckerberg–based Algorithm for Solving a Network–Flow Formulation of the Convex Hull Pricing Problem,” *IEEE Transactions on Power Systems*, Volume 35, Issue 3, Pages 2108–2119, May 2020 (**2020 journal impact factor: 6.807**)
  
- 2020 • [J34] **F. Mancilla–David**, A. Angulo, and A. Street, “Power Management in Active Distribution Systems Penetrated by Photovoltaic Inverters: A Data–Driven Robust Approach,” *IEEE Transactions on Smart Grid*, Volume 11, Issue 3, Pages 2271–2280, March 2020 (**2020 journal impact factor: 10.490**)
  
- 2020 • [J33] A. Arancibia, C. Soriano–Rangel, **F. Mancilla–David**, R. Ortega, and K. Strunz, “Finite–time Identification of the Thévenin Equivalent Parameters in Power Grids,” *International Journal of Electrical Power & Energy Systems*, Volume 116, Pages 1–10, March 2020 (**2019 journal impact factor: 4.418**)
  
- 2019 • [J32] H. Robles–Campos, B. Azuaje–Berbecí, C. Scheller, A. Angulo and **F. Mancilla–David**, “Detailed Modeling of Large Scale Photovoltaic Power Plants under Partial Shading Conditions,” *Solar Energy*, Volume 194, Pages 485–498, December 2019 (**2019 journal impact factor: 4.674**)
  
- 2018 • [J31] W. He, C. Soriano–Rangel, R. Ortega, A. Astolfi, **F. Mancilla–David**, and S. Li, “Energy Shaping Control for Buck–Boost Converters with Unknown Constant Power Load,” *Control Engineering Practice*, Volume 74, Pages 33–43, May 2018 (**2018 journal impact factor: 3.232**)

- 2017 • [J30] A. Pyrkin, **F. Mancilla–David**, R. Ortega, A. Bobtsov, and S. Aronovskiy, “Identification of Photovoltaic Arrays’ Maximum Power Extraction Point via Dynamic Regressor Extension and Mixing,” *International Journal of Adaptive Control and Signal Processing*, Volume 31, Issue 9, Pages 1337–1349, September 2017 (**2017 journal impact factor: 2.082**)
  
- 2017 • [J29] J. D. Lara–Jiménez, J. M. Ramírez–Arredondo and **F. Mancilla–David**, “Allocation of PMUs for Power System–Wide Inertial Frequency Response Estimation,” *IET Generation, Transmission & Distribution*, Volume 11, Issue 11, Pages 2902–2911, August 2017 (**2017 journal impact factor: 2.618**)
  
- 2017 • [J28] M. Carrasco, A. Laudani, G. Lozito, **F. Mancilla–David**, F. Riganti Fulginei, and A. Salvini, “Low cost solar irradiance sensing for PV sytems,” *Energies*, Volume 10, Issue 7, Article 998, July 2017 (**2017 journal impact factor: 2.676**)
  
- 2017 • [J27] M. Carrasco, **F. Mancilla–David**, A. Angulo, J. Weston and P. Papantoni–Kazakos, “Proximal Jacobian Distribution Optimal Power Flow in a Distributed Cyber–Physical Environment,” *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, Volume 7, Issue 2, Pages 319–328, June 2017 (**2017 journal impact factor: 3.218**)
  
- 2017 • [J26] A. Angulo, M. Carrasco, **F. Mancilla–David**, A. Street, and R. Cárdenas, “Experimental Parameter Extraction in the Single–Diode Photovoltaic Model via a Reduced–Space Search,” *IEEE Transactions on Industrial Electronics*, Volume 64, Issue 2, Pages 1468–1476, February 2017 (**2017 journal impact factor: 7.050**)
  
- 2017 • [J25] P. García–Vite, C. Soriano–Rangel, J. C. Rosas–Caro, and **F. Mancilla–David**, “A DC–DC Converter with Quadratic Gain and Input Current Ripple Cancellation at a Selectable Duty Cycle,” *Renewable Energy*, Volume 101, Pages 431–436, February 2017 (**2017 journal impact factor: 4.900**)
  
- 2016 • [J24] A. Angulo, **F. Mancilla–David**, R. Palma–Behnke, and D. Espinoza, “A Polyhedral–Based Approach Applied to Quadratic Cost Curves in the Unit Commitment Problem,” *IEEE Transactions on Power Systems*, Volume 31, Issue 5, Pages 3674–3683, September 2016 (**2016 journal impact factor: 5.680**)

- 2016 • [J23] M. Carrasco and **F. Mancilla–David**, “Maximum Power Point Tracking Algorithms for Single–Stage Photovoltaic Power Plants under Time–Varying Reactive Power Injection,” *Solar Energy*, Volume 132, Pages 321–331, July 2016 (**2016 journal impact factor: 4.018**)
  
- 2016 • [J22] F. Neves, M. Carrasco, **F. Mancilla–David**, G. Azevedo, and V. Santos, “Unbalanced Grid Fault Ride–Through Control for Single–Stage Photovoltaic Inverters,” *IEEE Transactions on Power Electronics*, Volume 31, Issue 4, Pages 3338–3347, April 2016 (**2016 journal impact factor: 7.151**)
  
- 2015 • [J21] A. Laudani, G. M. Lozito, **F. Mancilla–David**, F. Riganti–Fulginei, and A. Salvini, “An Improved Method for SRC Parameter Estimation for the CEC PV Module Model,” *Solar Energy*, Volume 120, Pages 525–535, October 2015 (**2015 journal impact factor: 3.685**)
  
- 2015 • [J20] C. Soriano–Rangel, J. C. Rosas–Caro, and **F. Mancilla–David**, “An Optimized Switching Strategy for a Ripple–Cancelling Boost Converter,” *IEEE Transactions on Industrial Electronics*, Volume 62, Issue 7, Pages 4226–4230, July 2015 (**2015 journal impact factor: 6.383**)
  
- 2015 • [J19] **F. Mancilla–David**, J. L. Domínguez–García, M. De Prada, O. Gomis–Bellmunt, M. Singh, and E. Muljadi, “Modeling and Control of Type–2 Wind Turbines for Sub–Synchronous Resonance Damping,” *Energy Conversion and Management*, Volume 97, Pages 315–322, June 2015 (**2015 journal impact factor: 4.801**)
  
- 2015 • [J18] J. C. Rosas–Caro, J. C. Mayo–Maldonado, **F. Mancilla–David**, A. Valderrabano–González, and F. Beltrán Carbajal, “Single–Inductor Resonant Switched Capacitor Voltage Multiplier with Safe Commutation,” *IET Power Electronics*, Volume 8, Issue 4, Pages 507–516, April 2015 (**2016 journal impact factor: 3.547**)
  
- 2014 • [J17] M. Carrasco, **F. Mancilla–David**, and R. Ortega, “An Estimator of Solar Irradiance in Photovoltaic Arrays with Guaranteed Stability Properties,” *IEEE Transactions on Industrial Electronics*, Volume 61, Issue 7, Pages 3359–3366, July 2014 (**2014 journal impact factor: 6.498**)
  
- 2014 • [J16] **F. Mancilla–David**, F. Riganti–Fulginei, A. Laudani, and A. Salvini, “A Neural Network–Based Low–Cost Solar Irradiance Sensor,” *IEEE Transactions on Instrumentation and Measurement*, Volume 63, Issue 3, Pages 583–591, March 2014 (**2014 journal impact factor: 1.790**)

- 2014 • [J15] M. De Prada Gil, **F. Mancilla–David**, J. L. Domínguez–García, E. Muljadi, M. Singh, O. Gomis–Bellmunt, and A. Sumper, “Contribution of Type–2 Wind Turbines to Sub–Synchronous Resonance Damping,” *International Journal of Electrical Power and Energy*, Volume 55, Pages 714–722, February 2014 (**2015 journal impact factor: 2.587**)
  
- 2013 • [J14] A. Arancibia, K. Strunz, and **F. Mancilla–David**, “A Unified Single– and Three–Phase Control for Grid Connected Electric Vehicles,” *IEEE Transactions on Smart Grid*, Volume 4, Issue 4, Pages 1780–1790, December 2013 (**2013 journal impact factor: 4.334**)
  
- 2013 • [J13] R. Cisneros, **F. Mancilla–David**, and R. Ortega, “Passivity–Based Control of a Grid–Connected Small–Scale Windmill with Limited Control Authority,” *IEEE Journal of Emerging and Selected Topics in Power Electronics*, Volume 1, Issue 4, Pages 247–259, December 2013 (**2015 journal impact factor: 3.129**)
  
- 2013 • [J12] P. García–Vite, **F. Mancilla–David**, and J. M. Ramírez–Arredondo, “Per–Sequence Vector–Switching Matrix Converter Modules for Voltage Regulation,” *IEEE Transactions on Industrial Electronics*, Volume 60, Issue 12, Pages 5411–5421, December 2013 (**2013 journal impact factor: 6.500**)
  
- 2013 • [J11] A. Laudani, **F. Mancilla–David**, F. Riganti–Fulginei, and A. Salvini, “Reduced–Form of the Photovoltaic Five–parameter Model for Efficient Computation of Parameters,” *Solar Energy*, Volume 97, Pages 122–127, November 2013 (**2013 journal impact factor: 3.541**)
  
- 2013 • [J10] J. C. Rosas–Caro, **F. Mancilla–David**, J. Mayo–Maldonado, J. Gonzalez–Lopez, H. Torres–Espinosa, J. Valdez–Resendiz, “A Transformer–less High–Gain Boost Converter with Input Current Ripple Cancellation at a Selectable Duty Cycle,” *IEEE Transactions on Industrial Electronics*, Volume 60, Issue 10, Pages 4492–4499, October 2013 (**2013 journal impact factor: 6.500**)
  
- 2013 • [J9] M. Carrasco, **F. Mancilla–David**, F. Riganti–Fulginei, A. Laudani, and A. Salvini, “A Neural Networks–based Maximum Power Point Tracker with Improved Dynamics for Variable DC–Link Grid–Connected Photovoltaic Power Plants,” *International Journal of Applied Electromagnetics and Mechanics*, Volume 43, Issue 1–2, Pages 127–135, October 2013 (**2013 journal impact factor: 0.737**)

- 2013** • [J8] H. Tian, **F. Mancilla–David**, K. Ellis, E. Muljadi, and P. Jenkins, “Determination of the Optimal Configuration for a Photovoltaic Array Depending on the Shading Condition,” *Solar Energy*, Volume 95, Pages 1–12, September 2013 (**2013 journal impact factor: 3.541**)
- 2013** • [J7] R. Ortega, **F. Mancilla–David**, and F. Jaramillo, “A Globally Convergent Wind Speed Estimator for Wind Turbines Systems,” *International Journal of Adaptive Control and Signal Processing*, Volume 27, Issue 5, Pages 413–425, May 2013 (**2013 journal impact factor: 1.656**)
- 2012** • [J6] J. C. Rosas–Caro, **F. Mancilla–David**, J. M. Ramírez–Arredondo, and A. Bakir, “Two–Switch Three–Phase AC–link Dynamic Voltage Restorer,” *IET Power Electronics* Volume 5, Issue 9, Pages 792–802, November 2012 (**2012 journal impact factor: 1.519**)
- 2012** • [J5] H. Tian, **F. Mancilla–David**, K. Ellis, E. Muljadi, P. Jenkins, “A Cell–to–Module–to–Array Detailed Model for Photovoltaic Panels,” *Solar Energy*, Volume 86, Issue 9, Pages 2695–2706, September 2012 (**2012 journal impact factor: 2.952**)
- 2012** • [J4] M. Barragán–Villarejo, G. Venkataramanan, **F. Mancilla–David**, J. M. Maza–Ortega, and A. Gómez–Expósito, “Dynamic Modelling and Control of a Shunt–Series Power Flow Controller based on AC–Link,” *IET Generation, Transmission & Distribution*, Volume 6, Issue 8, Pages 1754–1763, August 2012 (**2012 journal impact factor: 1.414**)
- 2012** • [J3] **F. Mancilla–David** and G. Venkataramanan, “Realisation of an AC–Link Unified Power Flow Controller,” *IET Generation, Transmission & Distribution*, Volume 6, Issue 4, Pages 294–302, April 2012 (**2012 journal impact factor: 1.414**)
- 2012** • [J2] **F. Mancilla–David** and R. Ortega, “Adaptive Passivity–Based Control for Maximum Power Extraction of Stand–Alone Windmill Systems,” *Control Engineering Practice*, Volume 20, Issue 2, Pages 173–181, February 2012 (**2012 journal impact factor: 1.669**)
- 2008** • [J1] **F. Mancilla–David**, S. Bhattacharya and G. Venkataramanan, “A Comparative Evaluation of Series Power Flow Controllers Using DC and AC Link Converters,” *IEEE Transactions on Power Delivery*, Volume 23, Issue 2, Pages 985–996, April 2008 (**2008 journal impact factor: 1.289**)

## Peer reviewed conference papers (CU Denver students underlined)

- 2026 • [C63] O. Gonzalez, J. Delgado, A. Angulo and **F. Mancilla–David**, “Comparative Assessment of Linearized Power-Flow Models for Inverter-Dominated Systems,” in *Proceedings of the e 58th North American Power Symposium* (NAPS), Houghton, Michigan, October 2026
  
- 2026 • [C62] S. Tirumala, F. Conte, S. Grillo and **F. Mancilla–David**, “Control-Design-Oriented Modeling of Grid-Connected Photovoltaic Inverters,” in *Proceedings of the e 58th North American Power Symposium* (NAPS), Houghton, Michigan, October 2026
  
- 2026 • [C61] A. Casiraghi, F. Conte, **F. Mancilla–David**, F. Silvestro and S. Grillo, “A Tool for Small-Signal Stability Analysis of Converter-Dominated Power Systems: Validation Through High-Detailed Simulations,” in *Proceedings of the 2026 IEEE Energy Conversion Congress & Expo Europe*, Valencia, Spain, September 2026
  
- 2026 • [C60] M. Huerta, A. Angulo, and **F. Mancilla–David**, “Robust Physics-informed Neural Controllers for Large-Scale Active Distribution Networks,” in *2026 IEEE Power & Energy Society General Meeting*, Montréal, Canada, July 2026
  
- 2025 • [C59] F. Conte, **F. Mancilla–David**, A.Sagar, C. Li, F. Silvestro and S. Grillo, “Detailed Small-Signal Stability Analysis of the Cigré High-Voltage Network Penetrated by Grid-Following Inverter-Based Resources,” in *Proceedings of the 9th International Conference on Clean Electrical Power*, Villasimius, Sardinia, Italy, June 2025
  
- 2025 • [C58] M. Ul Hassan, M. Huerta, A. Angulo, E. Belloni and **F. Mancilla–David**, “Improving the 11-Parameter Model for Photovoltaic Modules via Technology-Driven Refinements,” in *Proceedings of the 9th International Conference on Clean Electrical Power*, Villasimius, Sardinia, Italy, June 2025
  
- 2024 • [C57] M. Huerta, A. Angulo, J. Sepúlveda and **F. Mancilla–David**, “An Artificial Neural Network Approach to Affine Policy Definition in Active Distribution Networks,” in *Proceedings of the IEEE 42nd Central America and Panama Convention* (CONCAPAN XLII), San Jose, Costa Rica, November 2024

- 2024 • [C56] J. Delgado, M. Huerta, A. Angulo and **F. Mancilla–David**, “Energy and power management in Smart Commercial Buildings using V2G applying a Robust Affine Policy,” in *Proceedings of the IEEE 42nd Central America and Panama Convention (CONCAPAN XLII)*, San Jose, Costa Rica, November 2024
- 2024 • [C55] M. Huerta, O. Gonzalez, A. Angulo and **F. Mancilla–David**, “An Active Distribution Network Model Including Legacy and Modern Equipment: Relaxations and Approximations Under Optimal Management,” in *Proceedings of the e 56th North American Power Symposium (NAPS)*, El Paso, Texas, October 2024
- 2024 • [C54] O. Gonzalez, M. Huerta, E. Belloni, A. Angulo and **F. Mancilla–David**, “A Modular Electrothermal Photovoltaic Array Model for BIPV Applications,” in *Proceedings of the e 24th IEEE International Conference on Environment and Electrical Engineering (EEEIC)*, Rome, Italy, June 2024
- 2023 • [C53] O. Abdelqader and **F. Mancilla–David**, “The Potential Role of Machine Learning in Improving Protective Relaying of Substations,” in *Proceedings of the 55<sup>th</sup> North American Power Symposium (NAPS)*, Asheville, North Carolina, October 2023
- 2023 • [C52] A. Bobtsov, **F. Mancilla–David**, S. Aranovskiy, and R. Ortega, “Photovoltaic Arrays’ Dynamic Model Parameter Estimation,” in *Proceedings of the 22<sup>nd</sup> World Congress of the International Federation of Automatic Control*, Yokohama, Japan, July 2023
- 2021 • [C51] M. Al–Ali and **F. Mancilla–David**, “Model predictive control of grid connected inverters using different discretization strategies,” in *Proceedings of the 53<sup>rd</sup> North American Power Symposium (NAPS)*, College Station, Texas, November 2021
- 2021 • [C50] C. González, A. Angulo, and **F. Mancilla–David**, “Enhancing Multistep Finite Control Set Performance of 3L–NPC Converters using Optimal Pulse Patterns,” in *Proceedings of the 47<sup>th</sup> Annual Conference of the IEEE Industrial Electronics Society*, Virtual Conference, October 2021
- 2021 • [C49] G. Ogbogu and **F. Mancilla–David**, “Forecast–Aided State Estimation Smoothing Parameter Optimization using Winter–Holt’s Methodology and RMSE,” in *Proceedings of the 52<sup>th</sup> North American Power Symposium (NAPS)*, Tempe, Arizona, April 2021

- 2019 • [C48] S. Harave and **F. Mancilla–David**, “Suppressing Circulating Current in the Modular Multilevel Converter Using Line-to-Line Voltage Correction Modules,” in *Proceedings of the 51<sup>th</sup> North American Power Symposium* (NAPS), Wichita, Kansas, October 2019
- 2019 • [C47] H. Robles–Campos and **F. Mancilla–David**, “A Control Scheme in the dq Reference Frame for Hexverter-based Systems,” in *Proceedings of the 51<sup>th</sup> North American Power Symposium* (NAPS), Wichita, Kansas, October 2019
- 2019 • [C46] H. Robles–Campos and **F. Mancilla–David**, “A comparative evaluation of modulation strategies for Hexverter-based Modular Multilevel Converters,” in *Proceedings of the IEEE International Conference on Industrial Technology* (ICIT), Melbourne, Australia, February 2019
- 2018 • [C45] C. Soriano–Rangel and **F. Mancilla–David**, “Hexverter-Based Optimal Low Frequency AC Transmission System,” *Proceedings of the 50<sup>th</sup> North American Power Symposium* (NAPS), Fargo, North Dakota, September 2018
- 2018 • [C44] W. He, C. Soriano–Rangel, R. Ortega, A. Astolfi, **F. Mancilla–David** and S. Li, “DC–DC Buck–Boost Converters With Unknown CPL: An Adaptive PBC,” in *Proceedings of the 2018 American Control Conference* (ACC), Milwaukee, Wisconsin, June 2018
- 2017 • [C43] A. Bunaiyan and **F. Mancilla–David**, “Two–Stage Approach for the Optimal Power Flow of Photovoltaic–Penetrated Distribution Systems,” in *Proceedings of the 49<sup>th</sup> North American Power Symposium* (NAPS), Morgantown, West Virginia, September 2017
- 2017 • [C42] C. Soriano–Rangel, M. Carrasco, and **F. Mancilla–David**, “A Comparative Evaluation of HVDC Ties Using Line Commutated and Modular Multilevel Converters,” in *Proceedings of the 49<sup>th</sup> North American Power Symposium* (NAPS), Morgantown, West Virginia, September 2017
- 2017 • [C41] A. Bunaiyan and **F. Mancilla–David**, “Comparison of the Distribution Optimal Power Flow Relaxations for Unbalanced Loads and Generations,” in *Proceedings of the 49<sup>th</sup> North American Power Symposium* (NAPS), Morgantown, West Virginia, September 2017

- 2016 • [C40] A. M. S. Al-bayati, **F. Mancilla–David**, and J. L. Domínguez–García, “Aggregated Models of Wind Farms: Current Methods and Future Trends,” in *Proceedings of the 48<sup>th</sup> North American Power Symposium* (NAPS), Denver, Colorado, September 2016
- 2016 • [C39] D. Wiebe, **F. Mancilla–David**, M. Carrasco, and A. Bunaiyan, “Photovoltaic Inverter Dispatch for Voltage Regulation in Power Distribution Systems: A Comparative Evaluation,” in *Proceedings of the 48<sup>th</sup> North American Power Symposium* (NAPS), Denver, Colorado, September 2016
- 2016 • [C38] A. Bunaiyan, M. Carrasco and **F. Mancilla–David**, “Numerical Assessment of Second Order Cone Relaxation for Distribution Optimal Power Flow Problems,” in *Proceedings of the 48<sup>th</sup> North American Power Symposium* (NAPS), Denver, Colorado, September 2016
- 2016 • [C37] H. Robles–Campos and **F. Mancilla–David**, “Selective Harmonic Elimination for the Modular Multilevel Converter,” in *Proceedings of the 48<sup>th</sup> North American Power Symposium* (NAPS), Denver, Colorado, September 2016
- 2016 • [C36] A. Laudani, F. Riganti–Fulginei, A. Salvini, G. Lozito, M. Carrasco and **F. Mancilla–David**, “A Fast and Effective Procedure for Sensing Solar Irradiance in Photovoltaic Arrays,” in *Proceedings of the 16<sup>th</sup> IEEE International Conference on Environment and Electrical Engineering*, Florence, Italy, June 2016
- 2016 • [C35] A. Pyrkin, **F. Mancilla–David**, R. Ortega, A. Bobtsov, and S. Aranovskiy, “Identification of the Current–Voltage Characteristic of Photovoltaic Arrays,” in *Proceedings of the 12<sup>th</sup> IFAC International Workshop on Adaptation and Learning in Control and Signal Processing*, Eindhoven, The Netherlands, June 2016
- 2015 • [C34] X. Wang, M. Carrasco, **F. Mancilla–David**, and D. Connors, “Accelerating Detailed Simulations of an HVDC System Based on Modular Multilevel Converters in a Multi–Core Environment,” in *Proceedings of the 47<sup>th</sup> North American Power Symposium* (NAPS), Charlotte, North Carolina, September 2015
- 2015 • [C33] N. M. Salgado–Herrera, **F. Mancilla–David**, A. Medina–Ríos, and R. Tapia–Sánchez, “THD Mitigation in Type–4 Wind Turbine Through AFE Back to Back Converter,” in *Proceedings of the 47<sup>th</sup> North American Power Symposium* (NAPS), Charlotte, North Carolina, September 2015

- 2014 • [C32] H. J. Álvarez, J. A. Ramírez, P. Zúñiga and **F. Mancilla–David**, “Static Synchronous Series Compensator for Active Power Flow Control During Unconventional Operating Conditions,” in *Proceedings of the 2014 IEEE International Autumn Meeting on Power, Electronics and Computing* (ROPEC), Ixtapa, Mexico, November 2014
- 2014 • [C31] M. Alsadah and **F. Mancilla–David**, “Modeling and Control of Grid–Connected Photovoltaic Power Plants Utilizing a Simplified Model of the Modular Multilevel Converter,” in *Proceedings of the 46<sup>th</sup> North American Power Symposium* (NAPS), Pullman, Washington, September 2014
- 2014 • [C30] E. Canak, M. Carrasco, and **F. Mancilla–David**, “Modeling and Control of a Grid–Connected Small–Scale Windmill System Using a Pulse Width Modulated Modular Multilevel Converter,” in *Proceedings of the 46<sup>th</sup> North American Power Symposium* (NAPS), Pullman, Washington, September 2014
- 2014 • [C29] J. C. Rosas–Caro, J. C. Mayo–Maldonado, **F. Mancilla–David**, A. Valderrabano–Gonzalez, F. Beltran Carbajal, and V. Sanchez, “Single–Inductor Resonant Switched Capacitor Voltage Multiplier with Safe Commutation,” in *Proceedings of the 2014 IEEE Energy Conversion Congress & Exposition* (ECCE), Pittsburgh, Pennsylvania, September 2014
- 2014 • [C28] A. Laudani, F. Riganti Fulginei, A. Salvini, G. M. Lozito, and **F. Mancilla–David**, “Implementation of a neural MPPT algorithm on a low–cost 8–bit microcontroller,” in *Proceedings of the 2014 International Symposium on Power Electronics, Electrical Drives, Automation and Motion* (SPEEDAM), Ischia, Italy, June 2014
- 2014 • [C27] M. Carrasco, **F. Mancilla–David**, G. Venkataramanan, and J. Reed, “Low Frequency HVac Transmission to Increase Power Transfer Capacity,” in *Proceedings of the 2014 IEEE PES Transmission & Distribution Conference & Exposition*, Chicago, Illinois, April 2014
- 2013 • [C26] P. M. García–Vite, **F. Mancilla–David**, J. M. Ramírez, C. García Guendulain, and J. de Jesus Chavez, “A pulse width modulated AC link dynamic voltage restorer,” in *Proceedings of the 2013 IEEE International Autumn Meeting on Power, Electronics and Computing* (ROPEC), Mexico City, Mexico, November 2013

- 2013 • [C25] J. C. Rosas–Caro, **F. Mancilla–David**, H. L. Torres–Espinosa, and A. Valderrabano–Gonzalez, “A Hybrid Interleaved/Switched–Capacitor Boost Converter,” in *Proceedings of the IEEE Energy Conversion Congress and Exposition*, Denver, Colorado, September 2013
- 2013 • [C24] H. Tian, **F. Mancilla–David**, E. Muljadi, T. Stoffel, and A. Andreas, “Model Validation of Photovoltaic Systems,” in *Proceedings of the 5<sup>th</sup> IEEE Green Technologies Conference (GreenTech)*, Denver, Colorado, April 2013
- 2013 • [C23] M. A. Hammoudeh, **F. Mancilla–David**, J. D. Selman, and P. Papantoni–Kazakos, “Communication Architectures for Distribution Networks within the Smart Grid Initiative,” in *Proceedings of the 5<sup>th</sup> IEEE Green Technologies Conference*, (GreenTech) Denver, Colorado, April 2013
- 2013 • [C22] M. de Prada, J. L. Domínguez–García, **F. Mancilla–David**, E. Muljadi, M. Singh, O. Gomis–Bellmunt, and A. Sumper, “Type–2 Wind Turbine with Additional Sub–Synchronous Resonance Damping,” in *Proceedings of the 5<sup>th</sup> IEEE Green Technologies Conference (GreenTech)*, Denver, Colorado, April 2013
- 2012 • [C21] **F. Mancilla–David**, A. Arancibia, F. Riganti–Fulginei, E. Muljadi, and M. Cerroni, “A Maximum Power Point Tracker Variable DC–Link Three–Phase Inverter Control Scheme for Grid–Connected PV Panels,” in *Proceedings of the 3<sup>rd</sup> IEEE PES Innovative Smart Grid Technologies (ISGT) Europe Conference*, Berlin, Germany, October 2012
- 2012 • [C20] **F. Mancilla–David**, F. Riganti–Fulginei, M. Cerroni, A. Laudani, and A. Salvini, “A Neural Networks–Based Maximum Power Point Tracker for Improved Dynamics of Variable DC–Link Grid–Connected Photovoltaic Power Plants,” in *Proceedings of the 12<sup>th</sup> International Workshop on Optimization and Inverse Problems in Electromagnetism*, Ghent, Belgium, September 2012
- 2012 • [C19] O. Al Gali and **F. Mancilla–David**, “An AC–Link Pulse Width Modulated Shunt Converter for STATCOM Applications,” in *Proceedings of the 44<sup>th</sup> North American Power Symposium (NAPS)*, Champaign, Illinois, September 2012
- 2012 • [C18] B. Dhakal, **F. Mancilla–David**, and E. Muljadi, “Centralized and Modular DC/DC Converters for Photovoltaic Panels with Improved Efficiency,” in *Proceedings of the 44<sup>th</sup> North American Power Symposium (NAPS)*, Champaign, Illinois, September 2012

- 2012** • [C17] J. M. Ramirez, P. Garcia–Vite, J. M. Lozano, and **F. Mancilla–David**, “Dynamic voltage restorers based on AC–AC topologies,” in *Proceedings of the 2012 IEEE Power and Energy Society General Meeting (PES–GM)*, San Diego, California, 2012
- 2011** • [C16] R. Ortega, **F. Mancilla–David**, and F. Jaramillo, “A Globally Convergent Wind Speed Estimator for Windmill Systems,” in *Proceedings of the 50<sup>th</sup> IEEE Conference on Decision and Control (CDC)*, Orlando, Florida, December 2011
- 2011** • [C15] P. García–Vite, **F. Mancilla–David**, and J. M. Ramírez–Arredondo, “Dynamic Modeling and Control of an AC–Link Dynamic Voltage Restorer,” in *Proceedings of the 20<sup>th</sup> IEEE International Symposium on Industrial Electronics (ISIE)*, Gdansk, Poland, June 2011
- 2011** • [C14] R. Ortega and **F. Mancilla–David**, “A Wind Speed Estimator for Windmill Systems,” in *Proceedings of the 2011 International Conference on Renewable Energies and Power Quality (ICREPQ)*, Las Palmas de Gran Canaria, Spain, April 2011
- 2010** • [C13] J. C. Rosas–Caro, **F. Mancilla–David**, J. M. Ramírez–Arredondo, J. M. González–López, and R. Salas–Cabrera, “A Two–Switch AC–Link Voltage Regulator,” in *Proceedings of the 2010 IEEE Energy Conversion Congress and Exposition (ECCE)*, Atlanta, Georgia, September 2010
- 2010** • [C12] J. C. Rosas–Caro, **F. Mancilla–David**, J. M. Ramírez–Arredondo, and A. González–Rodríguez, “AC Choppers with Multiple Steps Switching,” in *Proceedings of the 2010 IEEE Energy Conversion Congress and Exposition (ECCE)*, Atlanta, Georgia, September 2010
- 2010** • [C11] J. C. Rosas–Caro, **F. Mancilla–David**, J. M. González–López, J. M. Ramírez–Arredondo, A. González–Rodríguez, N. Salas–Cabrera, M. Gómez–García, and H. Cisneros–Villegas, “A review of AC choppers,” in *Proceedings of the 20<sup>th</sup> IEEE International Conference on Electronics, Communications and Computer (CONIELECOMP)*, Puebla, Mexico, February 2010
- 2010** • [C10] S. Suryanarayanan, **F. Mancilla–David**, J. Mitra, and Y. Li, “Achieving the Smart Grid through Customer–Driven Microgrids Supported by Energy Storage,” in *Proceedings of the IEEE International Conference on Industrial Technology (ICIT)*, Viña del Mar, Chile, March 2010

- 2010** • [C9] P. García–Vite, **F. Mancilla–David** and J. M. Ramírez–Arredondo, “A Dynamic Voltage Restorer based on Vector–Switching Matrix Converters,” in *Proceedings of the IEEE International Conference on Industrial Technology (ICIT)*, Viña del Mar, Chile, March 2010
- 2009** • [C8] **F. Mancilla–David**, “AC Link Vector Switching Converters for Power Flow Control and Power Quality: A Review,” in *Proceedings of the 41<sup>st</sup> Annual North American Power Symposium (NAPS)*, Starkville, Mississippi, October 2009
- 2008** • [C7] **F. Mancilla–David** and G. Venkataramanan, “Analytical Modeling of Semiconductor Losses in Three Level Inverter for FACTS Applications,” in *Proceedings of the 34<sup>th</sup> Annual Conference of the IEEE Industrial Electronics Society (IECON)*, Orlando, Florida, November 2008
- 2007** • [C6] **F. Mancilla–David** and G. Venkataramanan, “Modeling and Control of the Static Synchronous Series Compensator under Different Operating Modes,” in *Proceedings of the 38<sup>th</sup> IEEE Power Electronics Specialists Conference, (PESC)* Orlando, Florida, June 2007
- 2005** • [C5] **F. Mancilla–David** and G. Venkataramanan, “Generalized Averaged Dynamic Modeling of Vector Switching AC Power Flow Controllers,” in *Proceedings of the 36<sup>th</sup> IEEE Power Electronics Specialists Conference (PESC)*, Orlando, Recife, Brazil, June 2005
- 2005** • [C4] **F. Mancilla–David** and G. Venkataramanan, “A Pulse Width Modulated AC Link Unified Power Flow Controller,” in *Proceedings of the 2005 IEEE Power Engineering Society General Meeting (PES–GM)*, San Francisco, California, June 2005
- 2004** • [C3] **F. Mancilla–David** and G. Venkataramanan, “A Synchronous Back–to–Back Intertie Using the Vector Switching Converter,” in *Proceedings of the 36<sup>th</sup> Annual North American Power Symposium (NAPS)*, Moscow, Idaho 2004
- 2002** • [C2] **F. Mancilla–David** and F. Alvarado, “Nomograms for Simultaneous Transfer Capability,” in *Proceedings of the 34<sup>th</sup> Annual North American Power Symposium (NAPS)*, Tempe, Arizona 2002

- 1999
- [C1] **F. Mancilla**, E. Tomasello, J. Bustos and N. Leiva, “Back up Algorithm for Single Power Transformer Contingency,” in *Proceedings of the IASTED International Conference Power and Energy Systems*, Marbella, Spain, 1999

## Peer reviewed book chapters

- 2024
- [B2] G. Venkataramanan, **F. Mancilla–David** and M. Gupta, “Chapter 10: Converters in Power Grid; book chapter in Power Electronic Converters and Systems, 2nd Edition,” Institute of Engineering and Technology (IET), 2024, ISBN: 978–1–83953–767–7
- 2015
- [B1] G. Venkataramanan and **F. Mancilla–David**, “Chapter 16: Converters in Power Grid; book chapter in Power Electronic Converters and Systems: Frontiers and Applications,” Institute of Engineering and Technology (IET), 2015, ISBN: 978–1–84919–826–4

## Other indicators of scholarly and creative activity

### Research reports (CU Denver students underlined)

- 2012
- [R7] H. Tian, **F. Mancilla–David**, K. Ellis, E. Muljadi, and P. Jenkins, “Detailed Performance Model for Photovoltaic Systems,” *National Renewable Energy Laboratory* (NREL) Report No. JA–5500–54601, 2012
- 2012
- [R6] M. de Prada, E. Muljadi, M. Singh, **F. Mancilla–David**, O. Gomis–Bellmunt, A. Sumper, and J. L. Domínguez–García, “Contribution of Type–2 Wind Turbines to Sub–Synchronous Resonance Damping,” *National Renewable Energy Laboratory* (NREL) Report No. CP–5500–56083, 2012
- 2012
- [R5] **F. Mancilla–David**, A. Arancibia, F. Riganti–Fulginei, E. Muljadi, and M. Cerroni, “Maximum Power Point Tracker Variable–DC–Link Three–Phase Inverter for Grid–Connected PV Panels,” *National Renewable Energy Laboratory* (NREL) Report No. CP–5500–56080, 2012
- 2012
- [R4] B. Dhakal, **F. Mancilla–David**, and E. Muljadi, “Centralized and Modular Architectures for Photovoltaic Panels with Improved Efficiency,” *National Renewable Energy Laboratory* (NREL) Report No. CP–5500–55894, 2012

- 2008      • [R3] G. Venkataramanan, **F. Mancilla–David**, T. Jimichi, T. Nwachukwu, S. Gupta, and P. Mendoza Araya, “Advanced Power Electronics Controllers for Substations: Challenges and Solutions,” *Electric Power Research Institute* (EPRI), Palo Alto, CA and the *University of Wisconsin–Madison*, Madison, WI, 2008. 1015948
  
- 2006      • [R2] G. Venkataramanan and **F. Mancilla–David**, “Advanced Power Electronics Controllers for Substations,” *Electric Power Research Institute* (EPRI), Palo Alto, CA and the *University of Wisconsin–Madison*, Madison, WI, 2006. 1012367
  
- 2002      • [R1] F. Alvarado, **F. Mancilla–David** and J. Zuluaga, “Nomograms Project: Conversion of System Limits into Market Signals,” prepared for the *Consortium for Electric Reliability Technology Solutions* (CERTS), 2002

## Patents

- 2013      • [P1] **F. Mancilla–David**, F. Riganti–Fulginei, A. Laudani, and A. Salvini, “A Neural Network Solar Irradiance Sensor,” US Patent Application No. 61/792,210, 2013

## Research advising

- 2007–      *PhD Students*
  - [PhD8] Sudheer Tirumala, “Stability of Converted-dominated power systems,” *in progress*
  - [PhD7] Khadija Amdored, “Non intrusive driver’s monitoring systems,” co-advised with N. Bui, *in progress*
  - [PhD6] Gadi Ogbogu, “Robust Modeling of Converter–Penetrated Power Systems,” *in progress*
  - [PhD5] Orlando Gonzalez, “Networked Microgrids,” *in progress*
  - [PhD4] Héctor Robles–Campos, “Modeling, Control and Modulation of Hexverter–based Modular Multilevel Converters,” *graduated*, May 2022
  - [PhD3] Carlos Soriano–Rangel, “Contributions to Modeling and Control of Power Converters for Renewable Energy Applications,” *graduated*, November 2018
  - [PhD2] Miguel Carrasco, “Modeling, Control, and Dispatch of Photovoltaic–Based Power Distribution Systems,” *graduated*, May 2016
  - [PhD1] Pedro García–Vite, “A Pulse Width Modulated AC Link Dynamic Voltage Restorer,” co-advised with J. M. Ramírez from CINVESTAV, Guadalajara, México, *graduated*, April 2012

**2007–** MS Students (Thesis option)

- [MS23] Stalin Sebastain, “Arc Flash Hazard Analysis in Photovoltaic Power Plants,” *graduated*, May 2025
- [MS22] Sahitya Gunnala, “Electricity Peak Shaving for Residential Buildings Using Long Short-Term Memory and Electric Vehicle Integration,” *graduated*, December 2023
- [MS21] Arun Sundara Raj, “Modeling of Dynamic Photovoltaic Arrays,” *graduated*, December 2021
- [MS20] Kaleb Waite, “Photovoltaic Module-Level Power Converters,” *graduated*, December 2021
- [MS19] Mohammed Al-Ali, “Model Predictive Control of Grid-Connected Two-Level Inverters,” *graduated*, July 2021
- [MS18] Matthew Triche, “Cascaded dc-dc Converters with Input Current Ripple Cancelation,” *graduated*, June 2020
- [MS17] Trey Greenwell, “Modeling of PV arrays,” *graduated*, May 2020
- [MS16] Chris Scheller, “Hexverter-Based Type-4 Windmill Systems,” *graduated*, January 2020
- [MS15] Sudarshan Harave, “Suppressing Circulating Currents in Modular Multilevel Converters,” *graduated*, July 2019
- [MS14] Daniel Wiebe, “Optimal Power Flow of Photovoltaic-Penetrated Distribution Systems,” *graduated*, May 2018
- [MS13] Bernardo Azuaje Berbeci, “Aggregated Simulations of Large Scale PV Power Plants in a PSCAD environment,” *graduated*, April 2017
- [MS12] Amin Bunaiyan, “Optimal Power Flow of Photovoltaic-Penetrated Distribution Systems,” *graduated*, April 2017
- [MS11] Xiaodan Wang, “Accelerated Simulations of Modular Multilevel Converters,” *graduated*, April 2015
- [MS10] Ersin Canak, “Modeling and control of a grid-connected small-scale windmills,” *graduated*, Fall 2014
- [MS9] Kayla Voller, “A Comparative Evaluation of Gas-Encapsulated and Outdoor Power Substations,” *graduated*, November 2013
- [MS8] Josh Timbre, “Ancillary Services from PV Arrays Cluster,” *graduated*, November 2013
- [MS7] Bishal Dhakal, “Centralized and Modular DC/DC Converters for Photovoltaic Panels with Improved Efficiency,” *graduated*, May 2012

- [MS6] Monther Hammoudeh, “Comparative Analysis of Communication Architectures and Technologies for Smart Grid Distribution Network,” *graduated*, May 2012
- [MS5] Mirsadraddin Rokhsari, “Optimal Energy Management in Microgrids,” *graduated*, May 2012
- [MS4] Ahmed Bakir, “Multiple-Step Switching for Vector-Switching Matrix Converters,” *graduated*, May 2012
- [MS3] Osama Al Gali, “Realization of an AC Link Pulse Width Modulated Shunt Converter for STATCOM and D-STATCOM Applications,” *graduated*, December 2011
- [MS2] Upendra Padala, “Analysis and Control of the Static Synchronous Series Compensator under Unbalanced Operating Conditions,” *graduated*, September 2011
- [MS1] Daniel Mejía, “Optimal Supervisory Control of Hybrid Energy Systems,” *graduated*, May 2011

2007–

## Visiting Scholars

- [VS28] Jose Delgado, “A Pricing Policy for Electric Vehicle Smart Charging Facilities: A Robust Bilevel Approach with Decision–Dependent Uncertainty,” *visitor from Universidad Técnica Federico Santa María, Valparaíso, Chile*, August 2025–May 2026
- [VS27] Miguel Huerta, “Robust Affine Policy-Based Vehicle-to-Building Energy Management for Office Buildings,” *visitor from Universidad Técnica Federico Santa María, Valparaíso, Chile*, Spring 2024
- [VS26] Prof. Alex Vedyakov, “Optimal Pulse Pattern for Multilevel Converters,” *visitor from ITMO University, Saint Petersburg, Russia*, September 2019
- [VS25] Prof. Alejandro Angulo, “Optimal Pulse Pattern for Multilevel Converters,” *visitor from Universidad Técnica Federico Santa María, Valparaíso, Chile*, August 2019
- [VS24] Prof. Julio Rosas–Caro, “Cascaded dc–dc Converter Topologies with Input Current Ripple Cancellation,” *visitor from Universidad Panamericana, Guadalajara, Mexico*, July 2017
- [VS23] Prof. Pedro García–Vite, “Voltage Balancing Algorithms for Capacitors in Hexverter Topologies,” *visitor from Instituto Tecnológico de Ciudad Madero, Ciudad Madero, Mexico*, July 2017
- [VS22] Prof. Antonio Valderrábano González, “Quadratic dc–dc Converters with Input Current Ripple Cancellation,” *visitor from Universidad Panamericana, Guadalajara, Mexico*, July 2016
- [VS21] Prof. Julio Rosas–Caro, “Quadratic dc–dc Converters with Input Current Ripple Cancellation,” *visitor from Universidad Panamericana, Guadalajara, Mexico*, July 2016
- [VS20] Prof. Pedro García–Vite, “Multipulse Modulation for Hexverter,” *visitor Universidad Politécnica de Altamira, Altamira, Mexico*, November 2014–October 2015
- [VS19] José David Lara, “Inertial Response Estimation in a Power System with Significant Wind Penetration,” *visitor from CINVESTAV, Guadalajara, Mexico*, January–May 2015
- [VS18] Nadia Salgado–Herrera, “Parallel Operation of Three Phase Inverters to Minimize Ripple,” *visitor from Universidad Michoacana de San Nicolás de Hidalgo, Morelia, Mexico*, January–May 2015
- [VS17] Angela Cassese, “Modeling of Organic Solar Cells,” *visitor from The University of Rome III, Italy*, August 2014–February 2015
- [VS16] Prof. Dionisio Ramírez, “Communication Protocols for Modular Multilevel Converters,” *visitor from Universidad Politécnica de Madrid, Madrid, Spain*, July 2014
- [VS15] Prof. Julio Rosas–Caro, “Hybrid Switched–Capacitor/Interleaved dc–dc converters,” *visitor from Universidad Panamericana, Guadalajara, Mexico*, July 2014
- [VS14] Andre Griebisch, “Clusterization of Power Distribution Systems,” *visitor from Fachhochschule Köln, Cologne, Germany*, November 2012–March 2013

- [VS13] Prof. Romeo Ortega, “Modeling and Control of Grid–Connected PV Systems,” *visitor from Supélec, France*, March 2013
- [VS12] Prof. Francesco Riganti–Fulginei, “A Neural Network Irradiance Sensor—System Training,” *visitor from The University of Rome III, Italy*, January 2013
- [VS11] Prof. Antonino Laudani, “A Neural Network Irradiance Sensor—Microcontroller Implementation,” *visitor from The University of Rome III, Italy*, January 2013
- [VS10] María Icardo Colvée, “PSCAD Simulation of Back–to–Back Inter-ties,” *visitor from Universidad de Cantabria, Santander, Spain*, September 2012–December 2012
- [VS9] Prof. Julio Rosas–Caro, “High–Gain DC–DC Converters,” *visitor from Instituto Tecnológico de Ciudad Madero, Mexico*, June 2012–August 2012
- [VS8] Mikel De Prada, “Subsynchronous resonance damping,” *visitor from the Polytechnic University of Catalonia, Barcelona, Spain*, April 2012–July 2012
- [VS7] Prof. Hongmei Tian, “Modeling and Control of Solar Parks,” *visitor from Shenzhen Polytechnic, China*, January 2011–January 2012
- [VS6] Dr. Arnaldo Arancibia, “Grid–Integration of Electric Vehicles,” *visitor from The Technical University of Berlin, Germany*, January 2012
- [VS5] Valerio Scheleter, “A Power System Stabilizer for Type II Wind-mills,” *visitor from The University of Rome III, Italy*, August 2011–March 2012
- [VS4] Matteo Cerroni, “Ancillary Services from Distributed Energy Resources,” *visitor from The University of Rome III, Italy*, August 2011–March 2012
- [VS3] Dr. Antonio Sánchez, “Control of Dynamic Energy Routers,” *visitor from Supélec, France*, April 2011
- [VS2] M. Barragán–Villarejo, “Dynamic Modelling and Control of an AC–Link Unified Power Flow Controller,” *visitor from the University of Sevilla, Spain*, September 2010
- [VS1] Prof. Pável Zuñiga, “Control of the Static Synchronous Series Compensator under Unbalanced Operation,” *visitor from the University of Guadalajara, Mexico*, March–April 2010

## Peer reviewed presentations at meetings/conferences

- 2013**
- [CP7] F. Mancilla–David, “Model Validation of Photovoltaic Systems,” presented at the 5<sup>th</sup> *IEEE Green Technologies Conference (GreenTech)*, Denver, Colorado, April 2013

- 2011 • [CP6] **F. Mancilla–David**, “Dynamic Modeling and Control of an AC–Link Dynamic Voltage Restorer,” presented at the 20<sup>th</sup> *IEEE International Symposium on Industrial Electronics* (ISIE), Gdansk, Poland, June 2011
- 2009 • [CP5] **F. Mancilla–David**, “AC Link Vector Switching Converters for Power Flow Control and Power Quality: A Review,” presented at the 41<sup>st</sup> *Annual North American Power Symposium* (NAPS), Starkville, Mississippi, 2009
- 2007 • [CP4] **F. Mancilla–David**, “Modeling and Control of the Static Synchronous Series Compensator under Different Operating Modes,” presented at the 38<sup>th</sup> *IEEE Power Electronics Specialists Conference* (PESC), Orlando, Florida, 2007
- 2005 • [CP3] **F. Mancilla–David**, “A Pulse Width Modulated AC Link Unified Power Flow Controller,” presented at the 2005 *IEEE Power Engineering Society General Meeting* (PES–GM), San Francisco, California, 2005
- 2004 • [CP2] **F. Mancilla–David**, “A Synchronous Back-to-Back Intertie Using the Vector Switching Converter,” presented at the 36<sup>th</sup> *Annual North American Power Symposium* (NAPS), Moscow, Idaho, 2004
- 2002 • [CP1] **F. Mancilla–David**, “Nomograms for Simultaneous Transfer Capability,” presented at the 34<sup>th</sup> *Annual North American Power Symposium* (NAPS), Tempe, Arizona, 2002

## Seminars/workshops presented

- 2022 • [RS22] **F. Mancilla–David**, “Characterization of Photovoltaic Systems for Grid Integration of Solar Power,” presented at *Universidad Panamericana*, Guadalajara, Mexico, June 2023
- 2022 • [RS21] **F. Mancilla–David**, “Role of control systems in power electronics,” presented at *ITAM*, Mexico City, Mexico, March 2022
- 2020 • [RS21] **F. Mancilla–David**, “Characterization of Photovoltaic Systems for Large Scale Solar Power Generation,” cyber-presented at *Universidad Técnica Federico Santa María*, Valparaíso, Chile, May 2020

- 2019      • [RS20] **F. Mancilla–David**, “Characterization of Photovoltaic Systems for Large Scale Solar Power Generation,” presented at *University of Sevilla*, Sevilla, Spain, October 2019
  
- 2017      • [RS19] **F. Mancilla–David**, “The Role of Power Electronics in Modern Energy Systems: A summary of research activities at CU Denver,” presented at *PUC–Rio University*, Rio de Janeiro, Brazil, July 2017
  
- 2017      • [RS18] **F. Mancilla–David**, “Guidelines for Planning the Chilean Electric Transmission Systems Under the New Electricity Bill,” **Keynote Speaker**, presented at *Chile’s Department of Energy*, Santiago, Chile, April 2017
  
- 2016      • [RS17] **F. Mancilla–David**, “Characterization of Photovoltaic Systems for Large Scale Solar Power Generation,” presented at *ITMO University*, Saint Petersburg, Russia, June 2016
  
- 2015      • [RS16] **F. Mancilla–David**, “Characterization of Photovoltaic Systems for Large Scale Solar Power Generation,” presented at *CentraleSupélec*, Paris, France, December 2015
  
- 2015      • [RS15] **F. Mancilla–David**, “Research on Energy & Power Systems at the University of Colorado Denver,” presented at the *Power Systems Summer School 2015*, CINVESTAV, Chapala, Mexico, October 2015
  
- 2015      • [RS14] **F. Mancilla–David**, “Research on Photovoltaic & Wind Energy System Performed at the University of Colorado Denver,” presented to the *U.S. State Department delegation of twelve international visitors through IIE/Education USA*, Denver, Colorado, July 2015
  
- 2013      • [RS13] **F. Mancilla–David**, “Characterization of Photovoltaic Systems for Large Scale Solar Power Generation,” presented at the *College of Engineering and Applied Science Seminar Series*, *University of Colorado Denver*, Denver, Colorado, October 2013
  
- 2011      • [RS12] **F. Mancilla–David**, “AC–Link Vector Switching Matrix Converters for Power Flow Control and Power Quality Enhancement,” presented as a Special Seminar at the *Technische Universität Berlin*, Berlin, Germany, June 2011

- 2011 • [RS11] **F. Mancilla–David**, “Small–Scale Permanent Magnets Windmills: Construction, Modeling, Control, and Design,” presented at the *Renewable Energy Club Seminar, University of Colorado Denver*, Denver, Colorado, January 2011
- 2011 • [RS10] **F. Mancilla–David**, “Small–Scale Permanent Magnets Windmills: Construction, Modeling, Control, and Design,” presented at the *College of Engineering and Applied Science Seminar Series, University of Colorado Denver*, Denver, Colorado, January 2011
- 2010 • [RS9] **F. Mancilla–David**, “Small–Scale Permanent Magnets Windmills: Construction, Modeling, Control, and Design,” **Keynote Speaker**, presented at the *International Conference and Fair on Education, Research & Employment in the Renewable Energy Sector, University of Chile*, Santiago, Chile, November 2010
- 2010 • [RS8] **F. Mancilla–David**, “FACTS and Custom Power Technology: Smart Devices for Smart Grids,” presented at the *Supélec Seminar Series*, Supélec, Paris, France, June 2010
- 2010 • [RS7] **F. Mancilla–David**, “FACTS and Custom Power Technology: Smart Devices for Smart Grids,” presented at the *International Workshop on Smartgrids and Distributed Generation, University of Chile*, Santiago, Chile, January 2010
- 2008 • [RS6] **F. Mancilla–David**, “Research in Power Engineer at the University of Colorado Denver,” presented at the *Electrical Engineering Department Seminar Series*, University of Colorado Denver, Denver, Colorado, October 2008
- 2008 • [RS5] **F. Mancilla–David**, “AC Link Load Flow Control in Electric Power Systems,” presented as a Special Seminar at the *University of Ruhuna Hapugala*, Galle, Sri Lanka, August 2008
- 2008 • [RS4] **F. Mancilla–David**, “AC Link Load Flow Control in Electric Power Systems,” presented as a Special Seminar at *ABB High Voltage Products*, Ludvika, Sweden, June 2008
- 2008 • [RS3] **F. Mancilla–David**, “AC Link Load Flow Control in Electric Power Systems,” presented as a Special Seminar at the *Royal Institute of Technology (KTH)*, Stockholm, Sweden, June 2008

- 2008**
  - [RS2] **F. Mancilla–David**, “AC Link Load Flow Control in Electric Power Systems,” presented as a Special Seminar at *ABB Corporate Research*, Vasteras, Sweden, May 2008
- 2006**
  - [RS1] **F. Mancilla–David**, “A Comparative Evaluation of Series Power Flow Controllers Using DC– and AC–Link Converters,” presented at the *WEMPEC Annual Review Meeting*, University of Wisconsin–Madison, Madison, Wisconsin, May 2006

## Courses taught

### Courses taught at CU Denver

- 2007–** *Regular courses*
  - [CO13] ELEC 3164–3 Energy Systems
  - [CO12] ELEC/MECH 3030–3 Electric Circuits and Systems
  - [CO11] ELEC 4174/5174–3 Power Electronic Systems
  - [CO10] ELEC 4184/5184–3 Power Systems Analysis
  - [CO9] ELEC 4444–1 Power Systems Laboratory
  - [CO8] ELEC 4755/5755–3 Renewable Energy Systems
  - [CO7] ELEC 5194–3 Power Systems Operation and Control
  - [CO6] ELEC 5294–3 Advanced Power Electronic Systems
- 2007–** *Advising courses*
  - [CO5] ELEC 3939 Cooperative Education Credits
  - [CO4] ELEC 4840 Undergraduate Independent Study
  - [CO3] ELEC 5840 Graduate Independent Study
  - [CO2] ELEC 6950 MS Thesis Credits
  - [CO1] ELEC 8990 PhD Thesis Credits
- 2007–** *Voluntary advising*
  - [VA2] Has served as an advisor to many Senior Design team projects, 2007–present
  - [VA1] Has participated in CU Denver’s Renewable Energy Club, 2011–2015

### Courses taught abroad

- 2016** *Course taught at PUC–Rio, Brazil*
  - [CA3] ELE2551 “Power Electronic Systems,” Fall 2016

- 2013**      *Short course taught at Supélec, France*
- [CA2] “Power Converters with Focus on Renewable Energy Resources,” A two-day course presented at Supélec, Paris, France, June 10–11, 2013
- 2011**      *Short course taught at the Polytechnic University of Madrid, Spain*
- [CA1] “The Role of Power Electronics within the Smart Grid Initiative,” A two-day course presented at the Polytechnic University of Madrid, Segovia, Spain, July 11–12, 2011

## Professional organizations

- 2020–**      *Advising*
- [A1] Faculty Advisor to CU Denver’s Chapter of the Society of Hispanic Professional Engineers (SHPE)
- 2007–**      *Memberships*
- [M3] Institute of Electrical and Electronics Engineers (IEEE)
  - [M2] IEEE Power & Energy Engineering Society (IEEE PES)
  - [M1] IEEE Power Electronics Society (IEEE PELS)
- 2012–2017**      *Editorial*
- [E1] Editorial board member for *Energy Technology, Wiley*, (**2017 journal impact factor: 3.175**) 2012–2017

## Service to technical community

- 2008–**      *PhD thesis external reviewer*
- [TC39] Zohreh Raghebi, (CU Denver, 2024)
  - [TC38] O. Cuaresma-Zevallos, (PUC–Rio, Brazil, 2019)
  - [TC37] F. de Paula García López, (University of Sevilla, Spain, 2019)
  - [TC36] L. Trilla (“Universitat Politècnica de Catalunya,” Spain, 2013)
  - [TC35] J. M. Lozano (CINVESTAV, México, 2011)
  - [TC34] J. C. Rosas–Caro (CINVESTAV, México, 2008)

- 2007–** *Reviewer for a large number of high impact journals*
- [TC33] IEEE Transactions on Power Electronics
  - [TC32] IEEE Transactions on Industrial Electronics
  - [TC31] IEEE Transactions on Industry Applications
  - [TC30] IEEE Journal of Emerging and Selected Topics in Power Electronics
  - [TC29] IET Power Electronics
  - [TC28] IEEE Transactions on Smart Grid
  - [TC27] IEEE Transactions on Power Delivery
  - [TC26] IEEE Transactions on Energy Conversion
  - [TC25] IEEE Transactions on Sustainable Energy
  - [TC24] IEEE Journal of Photovoltaics
  
  - [TC23] Solar Energy, Elsevier
  - [TC22] Applied Energy, Elsevier
  - [TC21] Energy Conversion and Management, Elsevier
  - [TC20] IEEE Transactions on Control Systems Technology
  - [TC19] IEEE Transactions on Circuits and Systems I
  - [TC18] IEEE Journal on Emerging and Selected Topics in Circuits & Systems
  - [TC17] IET Circuits, Devices & Systems
  - [TC16] IEEE Transactions on Instrumentation & Measurement
  

**2007–** *Reviewer for a large number of conferences*

    - [TC15] IEEE Energy Conversion Congress & Exposition (ECCE)
    - [TC14] American Control Conference (ACC)
    - [TC13] IEEE Green Technologies Conference (GreenTech)
    - [TC12] IEEE Conference on Innovative Smart Grid Technologies (ISGT)
    - [TC11] IEEE International Symposium on Industrial Electronics (ISIE)
    - [TC10] IEEE Power & Energy Society General Meeting (PES-GM)
    - [TC9] IEEE Power Electronics Specialists Annual Conference (PESC)
    - [TC8] North American Power Symposium (NAPS)  

**2024**

    - [TC7] Session co-chair: “New Perspectives on BIPs (Building Integrated Photovoltaic Systems): Numerical and Experimental Studies on the PV Cells, Power Converter, Control Systems, and Storage,” 24<sup>th</sup> *IEEE International Conference on Environment and Electrical Engineering* (EEEIC), Rome, Italy, June 2024

- 2013**      • [TC6] Session chair: “Power Systems–Session A,” 5<sup>th</sup> *IEEE Green Technologies Conference* (GreenTech), Denver, Colorado, April 2013
- 2012**      • [TC5] Session chair: “Distribution systems II,” 44<sup>th</sup> *Annual North American Power Symposium* (NAPS), Urbana, Illinois, 2012
- 2009**      • [TC2] Session chair: “Topics of Special Interest in Power Systems,” 41<sup>st</sup> *Annual North American Power Symposium* (NAPS), Starkville, Mississippi, 2009
- 2007**      • [TC1] Session chair: “Control of Power Systems,” 39<sup>th</sup> *Annual North American Power Symposium* (NAPS), Las Cruces, New Mexico, 2007

## Awards/honors

- 2020**      • [AH6] IEEE Industrial Electronics Society Student Best Paper Award (with student H. Robles-Campos), Paper “A comparative evaluation of modulation strategies for Hexverter-based Modular Multilevel Converters,” Proceedings of the 20th IEEE International Conference on Industrial Technology (ICIT-2019), Melbourne, Australia, 2019.
- 2016**      • [AH5] Fulbright Scholar, Fall 2016
- 2016–2017** • [AH4] Brazilian Government CNPq Visiting Scholar; partial funding to join PUC-Rio University as a visiting professor during the 2016–2017 academic year
- 2000–2001** • [AH3] “Eduardo Neale-Silva” Memorial Scholarship; full funding to study at the University of Wisconsin–Madison during the 2000–2001 academic year
- 1999**      • [AH2] “Federico Santa María” Award; given to the top electrical engineer in the class of 1999
- 1999**      • [AH1] “Colegio de Ingenieros de Chile” (Chile’s Institute of Engineers) Award; given to the top electrical engineer in the class of 1999

*End of Curriculum Vitae*