TEXAS STATE VITA

Dr. Ayse Kocalmis Bilhan

I. Academic/Professional Background

A. Name: Dr. Ayse Kocalmis Bilhan Title: Assistant Professor of Instruction

B. Educational Background

- Ph.D., 2012, Firat University, Elazig, Turkiye, Electrical and Electronics Engineering.
- M.S., 2005, Firat University, Elazig, Turkiye, Electrical and Electronics Engineering.
- B.S., 2002, Firat University, Elazig, Turkiye, Electrical and Electronics Engineering.

C. University Experience

- Assistant Professor of Instruction, Texas State University, Ingram School of Engineering, Electrical Engineering, San Antonio, TX, 08/2026–Present.
- Part-Time Faculty, Wayne State University, Department of Electrical and Computer Engineering, Detroit, MI, 09/2025–06/2026.
- Full-Time Faculty Member, Nevsehir Haci Bektas Veli University, Faculty of Engineering and Architecture, Electrical and Electronic Engineering Department, 01/2013–09/2025.
- Visiting Scholar, Wayne State University, Department of Electrical and Computer Engineering, 02/2015–02/2016.
- Visiting Scholar, Wayne State University, Department of Electrical and Computer Engineering, 03/2013–06/2013.
- Research Assistant and Associate, Firat University, Elazig, Turkiye, 01/2004–12/2012.

D. Relevant Professional Experience

- Intern, Department of Electrical and Electronic Engineering, University of Nottingham, Nottingham, UK, 06/2001–08/2001.

II. TEACHING

A. Teaching Honors and Awards

B. Courses Taught

Texas State University

- EE 3320, Microprocessors – Fall 2026
- EE 3120, Microprocessors Lab – Fall 2026
- EE 4331, Machine Learning for Engineers – Fall 2026

Wayne State University

- Introduction to Electrical Circuits – Fall 2025
- Introduction to Electrical Circuits – Winter 2026
- Numerical Methods for Engineers – Winter 2026

Nevsehir Haci Bektas Veli University

- Undergraduate: Protection on Power Systems; High Voltage Techniques; Electric Vehicle Technologies; Analog Electronics; Computer-Aided Analysis in EEE; Control with Microcontrollers and Microprocessors; Industrial Electronics.
- Graduate: Computerized Analysis of Power Electronic Circuits; DC Converters; Analysis and Design of Advanced Power Electronics; Inverter Circuits and Analysis; Scientific Research Techniques and Publication Ethics; Electrical Vehicles; Vector Control in Alternative Current Drives.

C. Graduate Theses/Dissertations or Exit Committees

- An investigation of the factors that negatively affect the efficiency after the production and installation of solar panels, 2025.
- Development and analysis of fuzzy logic-controlled maximum power point tracking algorithm for solar power plants, 2022.
- Comparison of production data of solar power plants modeled by the PVsyst program in Konya and Van provinces, 2022.
- PLC automation and automatic grinder discs grinding for an industrial grinding machine, 2021.

D. Courses Prepared and Curriculum Development

III. SCHOLARLY/CREATIVE

A. Works in Print

1. Books

a. Scholarly Monographs:

b. Textbooks:

c. Edited Books:

d. Chapters in Books

- Ayse Kocalmis Bilhan, “Chapter 7 – Artificial Neural Network Based Control in Power Electronics,” Modern Control Methods for Power Electronics Handbook, 2026.
- Aydın Boyar, Ayse Kocalmis Bilhan, and Ersan Kabalci, “Introduction to Power Converters,” Modern Control Methods for Power Electronics Handbook, 2026.
- Ayse Kocalmis Bilhan and Ersan Kabalci, “Chapter 11: Power Electronics Controlled Electric Propulsion Systems,” Handbook of Power Electronics in Autonomous and Electric Vehicles, pp. 161–191, 2024.
- Ayse Kocalmis Bilhan and Ersan Kabalci, “Chapter 9: DC-DC Converters,” Power Electronics Handbook, 5th ed., 2023.

2. Articles

a. Refereed Journal Articles

- Ayse Kocalmis Bilhan, Cem Haydaroglu, Heybet Kılıç, and Yakup Demir, “Integrating Fuel Cells, Photovoltaics, and Wind Turbines for Maximum Renewable Energy Efficiency,” Applied Sciences, 16(12), 2026. DOI: 10.3390/app16125818.
- Ayse Kocalmis Bilhan, Cem Haydaroglu, Heybet Kılıç, and Mahmut Temel Özdemir, “Machine Learning–Driven MPPT Control of PEM Fuel Cells with DC–DC Boost Converter Integration,” Electronics, 15, 701, 2026.
- Gamze Guven and Ayse Kocalmis Bilhan, “Effect of the Im Factor on the Power Output and Efficiency of Monocrystalline Solar Panels,” International Journal of Energy and Smart Grid, 10(1), 2025. DOI: 10.55088/ijesg.1649548.
- Gamze Guven and Ayse Kocalmis Bilhan, “Analysis of factors determining efficiency in the production and installation processes of solar panels,” NOHU Journal of Engineering Sciences, 13(4), 1400–1407, 2024. DOI: 10.28948/ngumuh.1535918.
- Ayse Kocalmis Bilhan, “Integrated Solar-based PEMWEs for Green Electricity Production,” International Journal of Hydrogen Energy, 75, 415–427, 2024. DOI: 10.1016/j.ijhydene.2024.02.137.
- Ayse Kocalmis Bilhan and Mahmut Cemal Kabak, “Industrial Grinding with Programmable Logic Control: A Case Study,” NEVU Journal of Engineering and Architecture, 1(1), 10–18, 2023.
- Serenay Emikonel and Ayse Kocalmis Bilhan, “Analysis of Turkey's Solar Energy Potential in Different Regions,” Osmaniye Korkut Ata University Journal, 170–184, 2022. DOI: 10.47495/okufbed.1034175.
- Ayse Kocalmis Bilhan and Serenay Emikonel, “Design of P&O and FL Based MPPT Controllers of PV Array by Using Positive Super Lift DC/DC Boost Converter,” International Journal of Energy and Smart Grid, 7(1–2), 36–46, 2022. DOI: 10.55088/ijesg.1201016.
- Ayse Kocalmis Bilhan and S. Sunter, “Simulation and Design of Three-Level Cascaded Inverter Based on Soft Computing Method,” Technical Gazette, 27(2), 489–496, 2020.
- Ayse Kocalmis Bilhan, “Design of Super-Lift DC/DC Boost Converter for Fuel Cell Application,” DUMF, 11(1), 29–37, 2020. DOI: 10.17559/TV-20180503115747.
- Ayse Kocalmis Bilhan and Abuzer Çaliskan, “Control of Fuel Cell/Battery Source for Electric Vehicle,” International Journal of Energy and Smart Grid, 3(1), 2018. DOI: 10.23884/IJESG.2018.3.1.02.
- Ayse Kocalmis Bilhan, A. Caliskan, and S. Unal, “Control of Fuel Cell Power System,” International Journal of Electronics, Mechanical and Mechatronics Engineering, 6(3), 1259–1265, 2016. DOI: 10.17932/IAU.IJEMME.m.21460604.2016.6/3.
- Ayse Kocalmis Bilhan, S. Sunter, “Comparison of Sinusoidal and Space Vector PWM Control Techniques for Three-Level Inverter Drives,” International Journal of Electronics, Mechanical and Mechatronics Engineering, 6(4), 2016.
- Ayse Kocalmis Bilhan and E. Akbal, “Modelling and Simulation of Two-Level Space Vector PWM Inverter Using Photovoltaic Cells as DC Source,” International Journal of Electronics, Mechanical and Mechatronics Engineering, 2(4), 311–317, 2012.

b. Non-refereed Articles:

3. Conference Proceedings

- Ayse Kocalmis Bilhan, “Empowering Fuel Cell Efficiency: Harnessing Machine Learning with DC/DC Boost Converter for Optimal Power Management,” 8th International Hydrogen Technologies Congress, 12–15 May 2024.
- Ayse Kocalmis Bilhan, “Maximizing Power Efficiency: The FC+PV+WT Hybrid Renewable Energy System,” 8th International Hydrogen Technologies Congress, 12–15 May 2024.
- Ayse Kocalmis Bilhan, “Fuel Cell Power Management using Machine Learning Enabled DC-DC Boost Converter,” 7th International Hydrogen Technologies Congress, 10–12 May 2023.

- Busra Ucar and Ayse Kocalmis Bilhan, “The Structure of Solar Chimney Power Plants,” 5th International Conference on Materials Science, Mechanical and Automotive Engineering and Technology, 2–4 September 2022.
- Ayse Kocalmis Bilhan, “Design of Output Buck-Boost Converter for Solar Inverter,” International Conference on Material Science and Technology, Ankara, Turkey, 2019.
- Ayse Kocalmis Bilhan and Abuzer Çaliskan, “Energy Management of Fuel Cell/Battery Source for Electric Vehicles,” International Engineering and Natural Sciences Conference, 2018.
- Ayse Kocalmis Bilhan, “The Control of Stepper Motor-Fed Photovoltaic System by Using PIC16F84A,” International Conference on Materials Science, Mechanical and Automotive Engineering and Technology, 2018.
- Ayse Kocalmis Bilhan, A. Caliskan, and S. Unal, “Feedback and Feedforward Control in DC/DC Boost Converter,” ELECO, Bursa, 2016.
- Ayse Kocalmis Bilhan, A. Caliskan, and S. Unal, “Simulation of a Photovoltaic Panel by Using Matlab/Simulink,” ECAI, Ploiesti, Romania, 2016.
- Ayse Kocalmis Bilhan, C. Wang, “Control Of Fuel Cell Power System,” International Journal of Electronics, Mechanical and Mechatronics Engineering, 2016.
- Ayse Kocalmis, Sedat Sunter, and Huseyin Altun, “Closed-Loop Speed Control of Cascaded Multilevel Inverter Motor Drives,” ISEF, Arras, France, 2009.
- Ayse Kocalmis and S. Sunter, “Application of a Neural Network Based Space Vector PWM Algorithm to Multi-Level Inverters,” ACEMP, Bodrum, Turkey, 2007.
- Ayse Kocalmis and S. Sunter, “Simulation of a Space Vector PWM Controller for a Three-Level Voltage-Fed Inverter Motor Drive,” IECON, Paris, 2006.
- Ayse Kocalmis and S. Sunter, “Modelling and Simulation of Multilevel Inverter Using Space Vector Modulation Technique,” TPE, Ankara, Turkey, 2006.

4. Abstracts:

5. Reports:

6. Book Reviews:

B. Works not in Print

1. Papers Presented at Professional Meetings

Conference presentations are listed under III.A.3 above.

2. Invited Talks, Lectures, and Presentations:

3. Consultancies:

4. Workshops:

C. Grants and Contracts

1. Funded External Grants and Contracts

- TUBITAK 2219 Post-Doctoral Research Support, $25,000, 02/2015–02/2016.
- TUBITAK 108E151, $7,000, “Design of Space Vector Pulse Width Modulation Controlled Three-Level Inverter Using Soft Computing Methods,” Ph.D. Thesis support, 2009.

2. Funded Internal Grants and Contracts

- NEUBAP, “Development of Motor Driver Design and Control Methods for Electric Vehicles,” 12/2023–12/2025.
- NEUBAP14F5, $7,000, “Direct Torque Control of Asynchronous Motor Feeding PV Panels by Using FPGA,” 04/2014–01/2017.
- NEUBAP14F11, $7,000, “Establishment of Solar-Following Network-Interactive Renewable Energy Facility,” 04/2014–10/2016.

D. Fellowships, Awards, Honors:

IV. SERVICE

A. University / Departmental

B. Professional

Peer Review and Professional Service

- Global Power, Energy and Communication Conference (GPECOM), Technical Program Committee Member and Sessions Chair, 2019–Present.

- Elsevier Energy Conversion and Management, reviewer, 2015–Present.
- Electric Power Components and Systems, reviewer, 2022–Present.
- International Journal of Hydrogen Energy, reviewer, 2022–Present.
- IEEE Transactions on Industrial Electronics, reviewer, 2015–2018.
- International Journal of Renewable Energy Research, reviewer, 2014–2015.
- Neural Computing and Applications, reviewer, 2014.
- Turkish Journal of Electrical Engineering & Computer Sciences, reviewer, 2014–2020.
- International Journal of Electrical Power and Energy Systems (IJEPES), reviewer, 2014.