Ahsan Nadeem

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RESEARCH INTERESTS

- MPPT algorithms for photovoltaic system
- Fault diagnosis in PV system
- Power electronics
- Sliding Mode Control applications in power converters

PUBLICATIONS

- **JOURNALS**
  - **A. Nadeem**, H. A. Sher, A. F. Murtaza and Nisar Ahmed "Online current-sensorless estimator for PV open circuit voltage and short circuit current," in ***Solar Energy, Elsevier***, vol. 213, pp. 198-210, 2021. **(IF=7.2)**
    [A new method is developed for the estimation of short circuit current (I_{sc}) and open-circuit voltage (V_{oc}) of the photovoltaic (PV) system using a current-sensorless technique. The simulation and experimental results show that the suggested techniques have significantly high tracking efficiency than the traditional methods.]
  - **A. Nadeem**, H. A. Sher and A. F. Murtaza, "Online fractional open-circuit voltage maximum output power algorithm for photovoltaic modules," in ***IET Renewable Power Generation***, vol. 14, no. 2, pp. 188-198, 2019. **(IF=3.9)**
    [An online V_{oc} estimation technique is developed for the fractional open circuit voltage (FOCV) MPPT algorithm. The simulation and experimental results verify that the proposed algorithm outperforms the analytical and conventional offline FOCV algorithms in terms of tracking efficiency.**]**
  - **A. Nadeem**, H. A. Sher, A. F. Murtaza, Nisar Ahmed and Ahmed Al-Durra "An improved sliding mode control based GMPPT algorithm for photovoltaic system" **(Accepted in *Transactions of the Institute of Measurement and Control*) (IF=2.146)**
    [An improved sliding mode control (SMC) based GMPPT algorithm is proposed. The simulation and experimental results confirm that the suggested controller outperforms the DIDSMC method in terms of chattering, steady-state error, voltage and power undershoot/overshoot, and tracking speed.**]**
  - **A.Nadeem,** "Performance evaluation of online open-circuit voltage estimation method for photovoltaic system" in ***SN Applied Sciences, Springer***, Vol. 12, 2020. **(Sole Author Paper)**
    [The accuracy of the proposed V_{oc} estimation technique (for the photovoltaic system) is checked for 9 hours. The experimental results show that the proposed online technique reduces the average estimated error of V_{oc} by 12.2% as compared to the traditional analytical technique.]
  - **A.Nadeem** and A.Hussain "A comprehensive review of global maximum power point tracking algorithms for photovoltaic systems". ***Energy Systems, Springer***, pp.1-42, 2021. **(Review Paper)**
    [The proposed paper provides a detailed, critical and comprehensive review of the widely used and recently developed global maximum power point tracking (GMPPT) algorithms for photovoltaic (PV) systems. The analysis in the proposed paper will help the designers to select the appropriate GMPPT algorithm for their photovoltaic system.**]**
  - **A. Nadeem**, H. A. Sher, A. F. Murtaza and Nisar Ahmed "An improved $0.8V_{oc}$ model based global maximum power point tracking algorithm for photovoltaic system" **(Under Review in *Electrical Engineering, Springer*)**

- **CONFERENCES**
  - **A. Nadeem,** Sher, H. and Murtaza, A., An online fractional open circuit voltage maximum output power algorithm for photovoltaic modules based on sliding mode control. In 2020

International Symposium on Recent Advances in Electrical Engineering and Computer Sciences, **IEEE). (Published)**

- Jawad, M., Qureshi, M.B., **A. Nadeem**, Ali, S.M., Shabbir, N. and Rafiq, M.N., 2018, May. Bi-Directional Nano Grid Design for Organizations with Plug-In Electric Vehicle Charging at Workplace. In *2018 IEEE International Conference on Electro/Information Technology (EIT)* (pp. 0357-0361). **IEEE**. **(Published)**
- **A**. **Nadeem**, Rafiq, M.N., Qureshi, M.B. and Jawad, M., 2017, December. Joint Power Management of Telecom Exchanges and Electric Vehicles Using Hybrid AC-DC Microgrid. In *2017 International Conference on Frontiers of Information Technology (FIT)* (pp. 127-132). **IEEE**. **(Published)**

AWARDS AND ACHIEVEMENTS

- Awarded fully funded graduate scholarship for Ph.D. Electronic Engineering at GIK Institute, Topi, Pakistan.
- Awarded Dean Honor Role for securing CGPA 3.61 in course work in Ph.D.
- Securing A+ grade in F.Sc.
- Securing A+ grade and 3rd position in school in matric.

EDUCATION

Ph.D. Electronic Engineering (Power Electronics),

Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Pakistan. 2018 - 2022

- **CGPA**: 3.61/4. **(With Honors)**
- **Thesis Topic**: Development of efficient MPPT algorithms for photovoltaic applications

M.Sc. Electrical Engineering (Power),

COMSATS Institute of Information Technology, Lahore, Pakistan. 2015 - 2017

- **CGPA**: 3.55/4.
- **Status**: Completed
- **Thesis Topic**: To Design Hybrid Power AC-DC Droop Controller for Telecom Exchange and Electric Vehicles

B.Sc. Electrical Engineering (Power),

University of Engineering and Technology Lahore, Pakistan. 2011 - 2015

- **CGPA**: 2.78/4
- **Status**: Completed
- **Specialization**: Electrical Power system

F.Sc. Pre-Engineering (HSSC),

Govt. College of Science Wahdat Road, Lahore, Pakistan 2009 - 2011

- **Obtained Marks/Percentage:** (988/1100)**,** 90%
- **Grade:** A+

Matriculation (SSC),

Govt. High School Township, Lahore, Pakistan 2007 - 2009

- **Obtained Marks/Percentage:** (935/1050), 89.04%
- **Grade:** A+

REVIEWER AND EDITORIAL ROLE

Reviewer

- IET Renewable Power Generation
- IET Energy Systems Integration
- Transactions of the Institute of Measurement and Control
- International Journal of Electronics

PROFESSIONAL EXPERIENCE

Worked as a Lab Engineer at GIK Institute **Jan 2018 – Jan 2021**

LAB(s) Instructed

- Linear circuit analysis (EE211L).
- Electronics-1 (EE221L).
- Power Electronics (EE434L)

Worked as Management Associate at Pakistan Telecommunication Company Apr 2016 - Apr 2017

- Technical Engineer

PROJECTS

Final Year Project

- Energy metering with theft detection

Semester Projects

- Variable Power Supply (220v ac to 0-30v Dc)
- Audio amplifier
- ALU (Arithmetic logic unit)
- Line follower Robot
- Buck, Boost, Buck-Boost and Cuk Converter

WORKSHOPS ATTENDED

Attended one day Continuing Professional Development (CPD) courses on:

- Smart grid.
- Latex.
- How to write technical research paper.
- Electrical Safety and Prevention of electrical fires.

PROFESSIONAL CERTIFICATES

- PLC Training on SIMENS S-1200 kit

SKILLS

Programming

- C++, Assembly language, C language, Ladder logic.

Software

- Matlab, Lab View, Multisim, Proteus, Pspice, Latex, Origin Pro and Microsoft Office.

REFERENCES

Prof. Dr. Muhammad Akbar
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Faculty of Electrical Engineering, GIK Institute, Swabi, Pakistan
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Prof. Dr. Nisar Ahmed
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Dr. Mirza Tariq Humayun
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