

Dr Mouhamadou Falilou NDIAYE

Academic Curriculum Vitae

Lecturer and Researcher
Department of Electrical Engineering
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Professional Profile

Lecturer and researcher at ESP, UCAD, with teaching experience since 2003 and industrial consulting experience since 2008. Research interests include renewable energy systems, automatic control, energy management, photovoltaic water pumping, microgrids and optimization. Work combines modeling and control with applied energy projects and technical training.

Education

2019 - Doctorate in Engineering Sciences

Specialization: Energy Systems and Environment.

2012 - Master II in Engineering Sciences

Specialization: Energy Systems and Environment.

2000 - Engineering Degree in Electrical Engineering

Focus: electronics, electrical engineering, industrial computing and automatic control.

Professional Experience

Since 2003 - Lecturer, École Supérieure Polytechnique, UCAD, Dakar.

Teaching in electrical engineering and automatic control at undergraduate and engineering levels.

Since 2008 - Industrial Consultant.

Technical expertise, electrical installation audits, renewable energy projects and professional training.

Since 2012 - Member, Centre International de Recherche et de Formation en Énergie Solaire.

Teaching and Academic Responsibilities

Teaching areas: automatic and digital control; PID control and system identification; state observation and estimation; fuzzy control; industrial electrical energy management; electrical installations.

Responsibilities held include industry relations and coordination of DIC 1 and DIC 2 engineering classes. Experience includes supervision of engineering and master's projects and participation in examination committees.

Research Interests and Tools

Renewable energy integration; PV-wind-battery systems; water-energy management; model predictive control; fuzzy supervisory control; particle swarm optimization; solar and wind resource forecasting.

Tools: MATLAB for modeling, simulation, control design and optimization; MATLAB Fuzzy Logic Toolbox.

ICRERA 2026 Papers

Paper ID 296

Hierarchical Economic MPC for Multi-Source DC Microgrids.

Paper ID 350

Discrete Fuzzy Supervisory Control of Parallel Pumps for Integrated Water-Energy Management in a PV-Wind-Battery System.

International Conference on Renewable Energy Research and Applications (ICRERA), Paris, France, 12-15 October 2026.

Selected Publications

2024 - A. F. Minai et al. Evolution and role of virtual power plants: Market strategy with integration of renewable based microgrids. *Energy Strategy Reviews*, vol. 53, 101390. DOI: 10.1016/j.esr.2024.101390.

2024 - Optimal sizing and economic assessment of diesel and solar mills for cereal milling in rural areas of Senegal. *International Journal of Power Electronics and Drive Systems*, vol. 15, no. 4, pp. 2526-2534. DOI: 10.11591/ijpeds.v15.i4.pp2526-2534.

2023 - D. Sene, A. Sarr, M. K. Sako, A. Ouattara, M. F. Ndiaye and V. Sambou. Evaluation and modeling of a solar photovoltaic power plant: Case of the Sakal plant. *Energy for Sustainable Development*, vol. 76.

2023 - M. F. Ndiaye et al. Photovoltaics Systems Performances Improvement: Problematic of Dust Waterless Automatic Cleaning on the Photovoltaic Solar Pannels Surface. *IEEE International Conference on Systems and Control (ICSC)*, pp. 700-705. DOI: 10.1109/ICSC58660.2023.10449803.

2022 - Management of Intermittent Solar and Wind Energy Resources: Storage and Grid Stabilization. Book chapter in *Sustainable Energy Access for Communities*.

2021 - W. M. Nkouna, M. F. Ndiaye, M. L. Ndiaye, F. Grandvaux, L. Tabourot and M. Condé. Sizing Optimization of a Charging Station Based on the Multi-scale Current Profile and Particle Swarm Optimization: Application to Power-assisted Bikes. *International Conference on Ecological Vehicles and Renewable Energies (EVER)*, pp. 1-12.

2018 - Water and energy management based on fuzzy logic and linear programming for a photovoltaic/wind/battery pumping system in rural environment. *ICRERA*, pp. 1115-1120.

Selected Applied Projects and Training

GIZ: technical work on multifunctional platforms and solar-powered agricultural processing equipment.

UNDP, PROCOSOC: technical support and quality assurance for mobile solar kiosks.

Guinea: training of technicians in photovoltaic systems and domestic and industrial electrical installations (Project D 11/BOCEJ/FCCE).