

Bakary Coulibaly

📍 Abu Dhabi, UAE

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Summary

Electrical Engineering PhD researcher at Khalifa University studying the grid integration of AI data centers and power-system stability under AI workloads. Background spans renewable energy systems, photovoltaic (PV) diagnostics with computer vision, and hardware design, with projects taken from proposal and budget to delivery at NIST and in Mali. Used to working across cultures and disciplines; fluent in English, French and Bambara.

Education

Khalifa University of Science and Technology

Abu Dhabi, UAE

Ph.D., Electrical Engineering

Aug 2025 – Present

- Research: grid integration of AI data centers; power-system stability under AI training and inference workloads.

The George Washington University

Washington, DC

M.S., Electrical Engineering (Power & Energy)

May 2025

- GPA: 3.75/4.00. SEAS Honor Award.
- Thesis: detection of defects in PV modules using computer-vision models (convolutional neural networks).
- Coursework: Power Electronics, Smart Power Grids, Electrical Energy Conversion, Energy and Sustainability.

The George Washington University

Washington, DC

B.S., Computer Engineering, Cum Laude

May 2023

- Derrill Rohlfs Award for Best SEAS Senior Design; Engineering Scholarship Award.

Montgomery College

Rockville, MD

A.S., Computer Engineering, Honors

May 2021

- Renaissance Scholar; Dr. Harry Harden Jr. Student Academic Excellence Award.

Lycée Rochambeau, The French International School

Bethesda, MD

French Baccalaureate, Sciences (Physics and Chemistry); Honors "Mention Bien"

Jun 2017

Professional Experience

Khalifa University

Abu Dhabi, UAE

Graduate Teaching Assistant, Electrical Engineering

Jan 2026 – Present

- Spring 2026, ELEN 316 Microprocessor Systems & Applications: taught one of the lecture's two lab groups, overseeing and grading lab work, supervising final projects and evaluating final project presentations; handled grading, exam proctoring and student questions for the lecture.
- Fall 2026: TA for the ELEN 316 Microprocessors and Microcontrollers lecture (grading and exam proctoring) and ELEN 497 Senior Design Project I. About 40 ELEN 316 students across the two semesters.

Marché Pro

West Africa

Co-Founder and Chief Operating Officer

Aug 2024 – Aug 2025

- Co-founded an early-stage startup that aggregated tenders across West Africa and helped companies bid on them.
- Ran day-to-day operations as COO until stepping down to begin the PhD.

Off-Grid Solar Installations (Independent)

Bamako, Mali

Project Lead

Jun 2024 – Aug 2024

- Designed and led installation of three off-grid solar systems, including a flagship 16.2 kW system with 45 kWh of battery storage and an 8 kW inverter, reducing household dependence on diesel generators.
- Performed power budget calculations, equipment selection and cost estimation in OpenSolar and PVSol to keep projects within budget and compliant with Malian safety standards.
- Coordinated with local technicians to address grid-instability challenges.
- Integrated remote monitoring for real-time performance tracking, improving reliability for the households served.

Institute for Security and Conflict Studies, The George Washington University

Washington, DC

Research Assistant

Oct 2022 – May 2024

- Compiled and synthesized French-language resources for U.S. Department of Defense Foreign Area Officer seminars.
- Helped develop syllabi and presentations on international security and energy sustainability topics.

- **PV module testing (Nov 2021 – May 2022):**
 - Led an electroluminescence (EL) test-fixture project end to end: researched parts (80/20 aluminum framing), designed it in CAD, proposed it to the team, prepared the budget request, then received the parts and built it.
 - Took part in the lab refurbishment for PV testing, running spatial-uniformity assessments to keep the solar simulator at AAA class.
 - Tested 20+ aged PV modules with AAA solar simulators and EL imaging; automated the analysis in Python, improving testing efficiency by 50%.
 - Co-authored the IEEE PVSC 2023 paper on 17-year-old building-integrated PV modules (see Publications).
- **Water heater testing (Aug 2020 – Dec 2021):**
 - Calibrated sensors and set up water-heating tests to U.S. Department of Energy standards, using LabVIEW and Excel VBA for data collection and analysis.
 - Wrote technical reports documenting methods and performance results.

Montgomery College

IT Service Desk Student Aide (Jan – Aug 2020); Learning Assistant (Jan – Jul 2019)

Rockville, MD
Jan 2019 – Aug 2020

- Provided IT support to students and staff during the college's move to remote operations at the start of COVID-19.
- Learning Assistant for Principles of Chemistry I (Spring 2019) and Precalculus (Summer 2019): supported lectures, occasionally taught, held office hours and review sessions, and helped students on GroupMe; 100% pass rate.

Projects

AutoGrow: Award-Winning Senior Design Project

The George Washington University

Washington, DC
Jan 2022 – May 2023

- Built a solar-powered automated gardening system (100 W PV panel, 12 V battery) with an ESP32 microcontroller, custom PCB, MicroPython firmware and a Flutter app.
- Four-person team (computer, electrical, software and mechanical engineering). Swapped roles with the electrical engineer so each could learn the other's field: took on the power hardware, with his help designing the power rails, while helping him with the code.
- Designed an expandable architecture for future wind-turbine integration.
- Won the Derrill Rohlf's Award for Best SEAS Senior Design.

PV Defect Detection with Computer Vision (M.S. Thesis)

The George Washington University

Washington, DC
2025

- Applied convolutional neural network methods to PV diagnostics using electroluminescence images. Full text: [GW ScholarSpace](#).

Publications

- A. M. Shore, T. Schlenoff, **B. Coulibaly**, D. Navon, S. L. Moffitt, B. Dougherty and B. H. Hamadani, "Electrical and Electroluminescence Evaluation of 17 Year Old Monocrystalline Silicon Building Integrated Photovoltaic Modules," in *2023 IEEE 50th Photovoltaic Specialists Conference (PVSC)*, 2023, doi: 10.1109/PVSC48320.2023.10360029.

Technical Skills

- **Design & Engineering Tools:** AutoCAD, Altium Designer, Fusion 360, LTspice, SPICE, OrCAD, Cadence, LabVIEW, GAMS, Visual Studio.
- **Energy & Simulation:** OpenSolar, PVSol, MATLAB, PowerWorld, AAA solar simulators, EL testing.
- **Programming & Data:** Python (PyTorch, TensorFlow, Jupyter), MicroPython, C, C++, Java, Verilog HDL, Excel VBA, Linux (Raspberry Pi, Ubuntu).
- **Hardware & Electronics:** microprocessors, microcontrollers, FPGAs, electronic characterization equipment, PCB design and assembly, electronics potting, power tools, 3D printing.
- **Professional:** project scoping, cost estimation and budgeting, technical reports, presentations, teamwork.

Languages

English, French and Bambara (native); Spanish (limited working proficiency); Arabic (basic, currently learning).

Leadership & Affiliations

- **IEEE:** Member since 2019; President of the Montgomery College Student Chapter, Jan 2019 – Aug 2020.
- **Honor societies:** Phi Theta Kappa (since 2019); Sociedad Honoraria de la Lengua Española (since 2020).