Bakary Coulibaly

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EDUCATION

The George Washington University   **Washington, DC**
M.S Electrical Engineering   **May 2025**
- SEAS Honor Award
- Thesis research in detection of defects on Photovoltaic modules using Convolutional Neural Network (AI).

The George Washington University   **Washington, DC**
B.S Computer Engineering, Cum Laude   **May 2023**
- Engineering Scholarship Award.

Montgomery College   **Rockville, MD**
A.S Computer Engineering , Honors   **May 2021**
- Renaissance Scholar
- Student Academic Excellence Award.

The French International School "Lycée Rochambeau"   **Bethesda, MD**
French Baccalaureate, Honors   **June 2017**

TECHNICAL SKILLS

- Hardware: Microprocessors, Microcontrollers, FPGAs, Electronics Test Equipment, Pick and Place, Electronics Potting, Power Tool operation. 3D printing.
- Software: AVR Studio, Xilinx Design Suite, MATLAB, Cadence, LabVIEW, Multisim, LTspice, SPICE, AutoCAD, Altium Designer, Fusion 360, S-edit, OrCAD, Visual Studio, Arduino IDE, Visio, Office Suite, Adobe Acrobat.
- Programming: Python, Micro-python, C++, C, Java, Verilog HDL, Linux (RPi, UBUNTU).
- Languages: English, French, Bambara, Spanish (Limited proficiency).

TECHNICAL PROJECTS

AutoGrow: Derrill Rohlfs Award of Best SEAS Senior Design   **January 2022 - May 2023**
- Designed, prototyped, and implemented an off-grid power system of automated gardening system using 100W solar panel and 12V battery.
- Implemented three power rails using relays and MOSFETS to accommodate various devices, ensuring system expandability for future integration of a wind turbine.
- Contributed to design of custom PCB, and implementation of ESP32 microcontroller, sensors, and voltage divider onto the PCB.
- Utilized Micropython to program microcontroller modules for multiplexing, demultiplexing, and low power mode, enhancing soil moisture reading and solenoid control.
- Developed user interface components, notably the login page, using Dart and Flutter within the system's application.
- Collaborated in wiring distribution and assembly, contributing to system resilience in extreme weather conditions.

NIST: Testing Photovoltaic Modules to analyze Degradation   **November 2021 - May 2022**
- Participated in laboratory refurbishment for PV module testing, conducting spatial uniformity assessments to maintain AAA solar simulator standards.
- Managed the calibration and maintenance of test equipment, overseeing the testing of 20+ solar panels for ageing analysis.
- Designed and assembled an Electroluminescence testing rig for Photovoltaic Modules, collaborating across departments for federal funding and budget compliance.
- Systematized analysis of electroluminescence test data by programming a Python script, resulting in a 50% reduction in analysis time.
- Co-authored the ongoing paper "Electrical and Electroluminescence Evaluation of 17 Year Old Monocrystalline Silicon Building Integrated Photovoltaic Modules".

NIST: Testing Water Heating Technologies   **August 2020 - December 2021**
- Directed sensor calibration and setup for various water heating technology tests, including 24-Hour Simulated Use and Maximum GPM Rating Tests.
- Utilized LabVIEW for controlling tests, acquiring data, and implementing procedures based on specific temperature thresholds.
- Utilized Excel VBA for efficient data collection and conducted detailed data analysis to assess energy performance and efficiency of water heating systems.
- Prepared comprehensive reports documenting testing methodologies, results, and insightful analysis of water heater performance.

RELEVANT WORK EXPERIENCE

Institute for Security and Conflict Studies - GWU   **Washington, DC**
Research Assistant   **October 2022 – May 2024**
- Facilitated seminar courses for the US Department of Defense's Foreign Area Officers by compiling French resources on diverse topics and assisting in the development of syllabi.

Heat Transfer and Alternative Energy Systems Group - NIST   **Gaithersburg, MD**
Foreign Guest Researcher   **August 2020 - May 2022**
- Research and development in PV module testing and solar simulator lab renovation, while undertaking water heating technology evaluations, boosting data analysis and testing efficiency.

IT Service Desk - Montgomery College   **Rockville, MD**
Student Aide   **January 2020 - August 2020**
- Provided critical IT support and assistance during Montgomery College's transition to remote operations amid the COVID-19 pandemic, resolving technical issues and optimizing operational efficiency.

Principles of Chemistry I & Precalculus - Montgomery College   **Rockville, MD**
Learning Assistant   **January 2019 - July 2019**
- Enhanced student learning in Principles of Chemistry I & Precalculus at Montgomery College, leading review sessions and employing remote teaching tools to ensure accessibility, resulting in a 100% passing rate under faculty mentorship.

LEADERSHIP
- IEEE - Member
- Phi Theta Kappa – Member.
- Sociedad Honoraria de la Lengua Española – Member.
- IEEE Montgomery College Student Chapter – President.

RELEVANT COURSEWORK

Data Structures, C Programming for ECE, Computer Organization, Microprocessors: Software/Hardware, Digital Design with FPGAs, ECE Capstone Project Lab (I, II, III), Introduction Computer Networks, Data Communications Lab, VLSI Design & Simulation, Introduction to Nanoelectronics, Computer Architecture/Design, ASIC Design & Testing of VLSI, Power Electronics, Electrical Power Systems, Smart Power Grids, Engineering Ethics, Women/Gender/Sexuality Studies-Honors, International Relations-Honors