Scarlett H. Francini

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EDUCATION

Duke University Pratt School of Engineering, Durham, NC | GPA: 3.735/4.0   August 2023 - May 2027
BSE in Electrical and Computer Engineering and Computer Science

- Relevant Coursework: Computer Architecture, Data Structures, Probability, Differential Equations, French Practicum.
- Benjamin N. Duke (BN) Full-ride Merit Scholarship Recipient and 2023 GSUSA Gold Award Scholarship Recipient.
- Associations: Dean's List, Duke Technology Scholar, Merit Scholars Board, Duke Climate Coalition, Duke Energy & Climate Club, Bull City Raas Dance Team, Society of Women Engineers, IEEE.

North Carolina School of Science and Mathematics, Durham, NC | GPA: 5.0/4.0 | SAT: 1560   August 2021 - May 2023

- Selected for Duke Health & Environment (2022) and Harvard Math & Social Justice (2023) summer programs.
- Physics Department Teaching Assistant for math-intensive courses.

TECHNICAL EXPERIENCE

Timao | Public Procurement & AI Consulting Startup | Marseille, France   June 2025 - July 2025

- Built n8n automation workflows integrating GPT models and Python scripts, cutting review time by 93%.
- Designed data pipelines for strategically extracting, summarizing, and classifying procurement documents in French.

Duke University FuNCtions Lab | Research Assistant   December 2024 - Present

- Conducted research on scalable Digital Twin models using Nvidia Sionna and co-developed the ClickDT platform (see Projects), contributing to IEEE-submitted work on 3D scene generation.

Duke University Nanomaterials and Thin Films Lab | Research Assistant   June 2022 - August 2024

- Developed Python GUI for instrumentation control and MATLAB GUI for data analysis of underwater mass spectra.
- Co-Authored Publications: "Spectral Reconstruction Improvement in a Cycloidal Coded-Aperture Mass Spectrometer" in American Chemical Society (April 2024), and "A Super-Resolution Coded Aperture Miniature Mass Spectrometer Proof-of-Concept for Planetary Science" in International Journal of Mass Spectrometry (January 2025).

Harvest Hope Food Bank 501(c)(3), Columbia, SC | Duke BN Data Volunteer Intern   May 2024 - June 2024

- Digitized over 100 grant records, improving data accessibility and accelerating food distribution across 20 SC counties.

FIRST Robotics Competition, Team 900 | Programming Team Member   August 2021 - May 2023

- Led URDF and C++ software development, contributing to 2023 World Championship Innovation in Control Award.

PROJECTS

- **ClickDT:** Built full-stack features for scalable 3D digital twin generation, developing frontend UI/UX and backend (Celery, PDAL, Geo2SigMap) integration with LiDAR/OSM data; research submitted to IEEE.
- **COVID & Climate Analysis:** Analyzed impact of 15+ countries' COVID policies on carbon emissions using R, identifying global trends.
- **Markov & Huffman:** Implemented Java algorithms for text generation and file compression/decompression.
- **CPU:** Built a MIPS-like CPU in Logisim, supporting R-, J-, and I-type instructions for advanced digital logic modeling.
- **Girl Scouts Gold Award:** Implemented a self-sustained model composting program at The Hawbridge School. Communicated educational materials to sustain project longevity through HTML/Javascript Website.
- **Credit Suisse:** Presented portfolio recommendation via Tableau for optimal returns with Python analysis.

SKILLS

- **Languages & Tools:** Python, C++, Java, C, R, MATLAB, JavaScript, HTML/CSS, Git, Docker, Celery, PDAL, Sionna, Geo2SigMap, Pandas, NumPy, Tableau, URDF, n8n, Arduino, CAD, Logisim, MIPS, ROS, Trello.