Brady Souma

Washington DC
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EDUCATION

Bachelor of Electrical Engineering Minors in Computer Science
Howard University, Washington, DC   2021-Present

ENGINEER DESIGN AND PRACTICAL EXPERIENCE

Apple Inc.   **Summer 2024**
Cupertino CA

A summer engineering internship spent at Apple's HQ working on the Technology Development Group of the Acoustics orgamisation

- **Developed** an implemented test procedure to study they impact of dirty power signals on high voltage film capacitors
- **Conducted** tests and experiments to understand the vibrational patterns of PCB when exposed to variable current, and propose solutions to navigate noise issues
- **Implemented and intergrated** a machine learning model to an internal tool that predicted the effect of different signals on the vibrational characteristics of different electronic devices.

Apple Inc.   **Summer 2023**
Cupertino CA

A summer engineering program management internship spent at Apple's HQ working on the Technology Development Group of the Acoustics orgamisation

- **Supported** the developement cycle of then current Apple watch speaker module
- **Lead** a total of **3** year long projects across **7** different cross functional teams in the **acoustic organization** in less than 3 months
- **Gained** experience in the field of human-centered design work, communication and problem-solving and networking across in a corporate setting
- **Built** a detailed schedule that helped save 16 weeks on the development of 13 months internal project

Arup.   **Summer 2022**
Washington DC

A summer Rotational internship spent working with MEP Engineers in various departments on several building and rail station construction projects

- **Recommended** and implemented renovations program for out-of-date facilities, saving **$20 million** in new building projected costs
- **Applied** background in thermodynamics and fluids to design HVAC systems, underground Electrical Conduits while building Energy Models on **$40M** plus projects
- **Built** presentations presented to potential clients based upon results and analysis of research on ways to better and faster reach sustainability action plan goals –

RESEARCH AND PROJECT EXPERIENCE

Summer Tapeout   **Summer 2024**
(Online)

- **Designed** a multiplier and divider using Cadence.
- **Wrote** full verilog code for Alu, control, multiplier, divide, modules and ensured code efficiency using xrun and genus tools
- **Developded a working knowledge** of future trends in silicon and quickly estimate how **area, speed, and power** of CMOS digital systems will change as technology shrinks.

Summer Research on **Gang Scheduling**   **Summer 2024**
(Online)
- **Researched** different parameters that could be used predict the scheduling time of jobs in High performance computing (HPC)
- **Drafted** proposals for potential areas of focus related to improving computing time and performance

Summer Research on **Video Generation using ML**   **Summer 2024**
(Online)
- **Self taught pytorch** and used it to implement CLIP and CLAP algorithms to develop proof of concept curated video generation using Machine Learnign models
- **Drafted** a standard procedure for combining the implementation of CLIP and CLAP

Student Housing Rental Alert Website- Computer Science   **January 2024**
Washington DC
- **Designing** a computer program using the 'C' programming language and web scraping Knowledge to **Track** and **Alert** Howard Students On Price changes of Housing Complex around the School
- **Computerizing** a list of different graduating senior students with Off campus Housing and connecting them with sophomores looking for housing

Hearing aid   **October 2023**

- **Simulated** and **Developed** a High Pass Filter that was used to design a hearing aid, using Matlab Simulink

Hoya Green; Hoya hacks   **October 2023**
Washington DC

- **Designed** a **sustainability and environmental-focused application** for Georgetown students to upload and learn about eco-friendly activities & initiatives in their community daily**.**
- **Won second place** out of over **200** teams at Hoya Hackaton

DC power system flaws   **Fall 2023**
Washington DC

- **Developed a Digital Twin** the test the robustness of DC's microgrid systems against a variety of faults and attacks
- **Proposed** potential imporvements to diverse faults. Explored the positive impact of adding a variety of Battery Energy Storage Systems

Design circuit that sends selected input signal to an output   **Fall 2023**
Washington DC

- **Created** Test Vectors in MATLAB;**Designed** conditional and select signal assignment-based architectures: **Simulated** 8-bit 4-to-1 multiplexer in ModelSim.
- **Designed** circuit that codes n-bit input into 2n -bit output by **creating** Test Vectors in MATLAB; Designed conditional and select signal assignment-based architectures in ModelSim: **Simulated** a 2-bit to 22-bit binary decoder in ModelSim, a 22 -bit to 2-bit priority encoder in ModelSim.
- **Designed** a circuit that detects odd parity by **creating** Test Vectors in MATLAB; Designed cascade, compact cascade, and tree-based architectures in ModelSimt: Simulated 8-bit Reduced-XOR Vector Circuit in ModelSim.

LEADERSHIP EXPERIENCE

IEEE HU Chapter   `   **May 2023- Present**
(President) – Washington DC

- **Built** a team that **developed, implemented and taught projects** that range from **designing amplifiers, assembling drones and using FPGAs to built Pacman- like games using verilog** to over **125 members**
- **Secured and Fundraised** around **24k$** to implement projects and related programming
- **Provided** Internship prep resources and **hosted** mock interviews for hardware and software roles to members

NSBE   `   **September 2022- Present**
Washington DC

A Leadership position with the National Society of Black Engineers, responsible for helping with National Conference coordination, represents the will of the NSBE Senate on a national level, by communicating the Senate's proposal through amendments and boosting the success of the local chapter.

- **Opened** a Patent Design Office that used resources from Howard patent offices to provide students a platform for trademark and patent skill development
- **Recruited** and **increased** membership by **40%, educated** on the use of new design programs and **organized** independent design projects and competitions that helped club members gain and sharpen experience in 3D PRINTING, and Fusion 360 design
- **Organized 3** regional conferences, hosting over **400+ students** in different locations of the DMV
- **Increased** the club membership participant numbers by seventy-three (73) percent in three (3) months

Engineering Initiave   `   **May 2024- Present**
(Founder) –Washington DC

- Launched an independent initiative at my school to address the lack of on hands project available to students at my school due to lack of funding
- **Recruited** over 35 students and **Optimized** a Regular Bike to an Electric bike Using selfed **customized,** batteries , a motor and a speed controller
- **Designed** and **currently conducting** a proof of concept research project to investigate the relationship between temperature and exposure rate to UV lights of Howard students on campus over time, and proove that integrating UV light sensors in student **wearables devices** would help reduce exposure risks.

Student Government – Senator   **May 2024- Present**

Washington DC
- **Drafted** legislations that would help fund airport shuttles to school for newly incoming International Student
- **Advocated** for the recurring funding of the FE and GRE exams of **10** students in the College Of Engineering and Architecture

VOLUNTEER EXPERIENCE

Alternative Spring Break   **Spring break 2021, 2022, 2023**
Washington DC
- **Served as Team Leader** in a community service hosted every spring break by my school under the initiative if **Youth Empowerment and Developement.**
- **Assisted** hughscool students from underrepresented communities in the cities of Milwaukee, Chicago and Buffallo about the college application process, reviewing essays and offerent application tips.
- **Compiled** a list of 70+ scholarships available for senior highshool students from these respective cities
- Lead a group of **50** Howard University Students across these three locations, assisting in the planning of community service initiatives like food drives, town cleaning and others.

TMCF STUDENT ADVOCATE   **May 2021- Present**
 Washington DC
- **Organised** scholarship application parties, sharing best practices when applying to over **500** students
- **Increased** scholarship obtention by the students in my school by 45%
- **Represented Howard University** at pitch competitions like the truist innovation challenge and served as corporate scholar for programs like META scholar, Apple Scholar

Engineers Without Borders   **Summer 2021**
Washington DC
- **Designed and helped installed** raised beds using CAD tools to assist facilitate farming for the senior citizens of ward 8 in DC, an area heavily affected by food deserts.

CHAPEL ASSITANT   **May 2024- Present**
Washington DC
- **Drafted** legislations that would help fund airport shuttles to school for newly incoming International Student
- **Advocated** for the recurring funding of the FE and GRE exams of 10 students in the College Of Engineering and Architecture

EXTRA CURRICULAR ACTIVITIES

HOWARD UIVERSITY MEN'S INTRAMURRAL BASKETBALL GUARD   **May 2024- Present**

Washington DC

- **Played** as point guard and shooting guard for the Howard Men's intramurral basketball team
- **Won** the University of Marylanf intrmurral showcase.

ROTC CADET   **January 2022- September 2024**

- **Served** as a 2 year AIRFORCE ROTC cadet in Det 130 at Howard University.
- **Led** a "flight" of 10 other cadets **assisting** their integration into the Detechament, by building a team focused environment through out the academic year

AWARDS AND SCHOLARSHIPS

APPLE NSI SCHOLAR   **May 2023- Present**

- **Designed an integrated (mutiplier)** circuit from the ground up, including synthesis, logical verification and equivalence checking, IO ring design and abutment, and DRC/LVS/GDS generation for a tapeout.
- **Included** a **"hardware trojan,"** which introduces random errors by changing the operation for a unique input combination. This trojan will randomly alter the intended operations, adding an extra layer of challenge and learning

TRUIST INNOVATION CHALLENGE   **OCTOBER 2021**

- **Won 3k $** after pitching a personal AI assistant that would help diversify the gig portfolio of Truist clients
- **Garnered** the support of executives at the company

SCHOLAR PROGRAMS AND SCHOLARSHIPS

- **Howard University Leadership Scholar**
- **Apple HBCU Scholarship**
- **TMCF Scholar**

RELEVANT COURSEWORK

- **Fundamental and Advanced Digital systems**
- **Circuit Theory, Thermodynamics**
- **Calculus I, II & III**
- **Computer Aided Design**
- **Engineering Programming and Applications**
- **Fundamentals of Electromagnetics**
- **Fundamentals of Electronics.**

TECHNICAL AND SOFTWARE SKILLS

- C## ●Revit ●MS InfoPath, ●MathCAD ●ASPEN ●Introductory C language Programming ●Fusion 360 ●SolidWorks ●Modelsim ●Microsoft 360 ●Simscale, Conflict Resolution Skills ●Keynote ●Nimbus ●Numbers ●Radar ●NX ●Matlab ●Python● Ansys ● Cadence tools – virtuoso, innovus ● Verilog