

# Nathan Demssie

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## EDUCATION

### Columbia University, Fu Foundation School of Engineering and Applied Science

May 2026 | New York, NY

Relevant Courses: Data Structures in Java, Linear Algebra, Probability for Engineers, Discrete Maths, Advanced Programming, Art of Engineering.

## SKILLS AND INTERESTS

**Languages:** Java (Proficient), C++ (Learning), Python (Proficient), HTML (Proficient), CSS (Proficient), Swift (Proficient), English (Fluent), Spanish (Fluent), Amharic (Fluent), JavaScript (Learning)  
**Applications:** IntelliJ, Xcode, Git, Visual Studio Code, Arduino IDE, Jupyter Notebook, Microsoft Office, Node.js  
**Organizations:** ColorStack, National Society of Black Engineers, Columbia University Black Pre-Professional Society.

## PROJECTS

### Single Cell Segmentation

Oct 2022 – Dec 2022 | New York, NY

*Collaborative Project*

- Implemented a deep neural network model in **Python** to segment single cells within baby hamster kidney (BHK) cell cultures.
- Train a U-Net model on a dataset to perform single-cell segmentation on Jupyter Notebook using **Python**.
- Use 50 epochs to train a neural network and compare it to the original test set by analyzing the DICE score per epoch.
- Determine the best epoch to model the data and compute its performance on test samples with **98.4%** accuracy.
- Presented the results of the best-performing model to Columbia's Biomedical Engineering Department.

### Button Mash

Oct 2022 – Dec 2022 | New York, NY

*Collaborative Project*

- Develop a Piano Tiles clone in **C++** using an **Arduino**, input detection, LED panel, and user interface.
- Work within a team of five students weekly and allocate our skills for design, construction, and coding.

### Personal Website

Jul 2023 | Washington, DC

*Independent Coding Project*

- Created a personal website from scratch using **HTML**, **CSS**, and **JavaScript**, incorporating a variety of elements such as transition delays, page divisions, font adjustments, hyperlinks, and spans.

### Analyzing NYC Air Pollution

Mar 2023 | New York, NY

*Coding Project*

- Used data published by The City of New York to analyze particulate matter (pm2.5).
- Developed a **Python** tool utilizing the dataset that allows users to extract neighborhood-specific information within specific time frames.
- Moreover, the dataset was leveraged to uncover discernible trends in air quality across New York City.

### Pokedex

Aug 2023 | Washington, DC

*Independent Coding Project*

- Created an iOS app utilizing the pokeapi and it features full-scale MVVM Application with **SwiftUI** and **Network Layer**.

## PROFESSIONAL EXPERIENCE

### Tutor

WASHINGTON, United States

*Children and Charity International (Mayor Marion S. Barry Summer Youth Employment Program)*

- Tutored and mentored students in a STEM-oriented program where the primary focus was on Mathematics and Computer Science.

### LLC Manager

WASHINGTON, United States

*The Musicianship (Mayor Marion S. Barry Summer Youth Employment Program)*

- Organized a music production mock LLC named "Crankage ENT" in which we produced and promoted an EP and a cipher, all geared towards a benefit concert.