

**CATHERINE LIVINGSTON**  
704.450.3212 | [catherine.livingston@duke.edu](mailto:catherine.livingston@duke.edu)

## EDUCATION

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**Duke University, Pratt School of Engineering**, Durham, NC  
*Bachelor of Science in Computer Science and Mechanical Engineering*

Expected **May 2022**

- Cumulative GPA: 3.36/4.00

**Cannon School**, Concord, NC

**May 2017**

- Cumulative GPA: 4.11/4.00

*Honors/Awards:* Graduated Cum Laude, Mu Alpha Theta (Math Honors Society), Chinese Honors Society, Chinese Award Recipient, AP Scholars Award Recipient, Honor Sword Recipient

## SKILLS AND COURSEWORK

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Data Structures and Algorithms, Computational Methods in Engineering, Engineering Design and Communication, Engineering Innovation, Linear Algebra, Intermediate Microeconomics I, Economic Principles, Introduction to Mechatronics

Skills: Java, Python, LaTeX, MATLAB, SOLIDWORKS

## PROJECTS

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**Markov** | Java | Created a program that utilizes HashMaps to generate text using a Markov Model

- Implemented the constructor and methods of a class Wordgram that represents a sequence of words or strings
- Overrode toString() and hashCode() methods that compute the return values just the first time the method is called
- Overrode equals() method that returns true when the parameter passed is a WordGram object with the same strings in the same order as this object
- Developed a class EfficientMarkov that extends a base class and overrode certain methods to turn O(N) complexity to O(1) using HashMap instance variable

**DNA** | Java | Simulated DNA splicing by building LinkedLists with optimized methods

- Create LinkStrand class that implements an interface using a singly linked list
- Created a nested/inner Node class; the singly linked list uses instance variables to reference the first and last nodes of the list
- Created methods .reverse(), .charAt(), and .toString() to traverse nodes of the internal linked list

**Electromagnetic Damping Lab** | Python and LaTeX | Created and plotted models from sensor data on a physical system

- Plotted data using Matplotlib.pyplot and found models for the data using physical laws and the solve\_ivp method from scipy.optimize
- Created a lab report using LaTeX containing graphs, tables, and equations

**Linear Algebra** | Python | Used numpy arrays to solve problems in linear algebra

**Autocomplete** | Java | Created an autocomplete function that uses binary search

**Beam Deflection** | Python | Used Matplotlib to plot the deflection of a beam and finding the maximums and minimums

## LEADERSHIP AND INVOLVEMENT

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**First-Year Advisory Counselor Program**, *Counselor*, Duke University

**Jun 2019 - Present**

- Mentoring twelve first-year students over the course of their freshman year
- Lead meetings during orientation week for first-year students that informed them on campus life and resources
- Presented the students with hard-hitting questions on diversity, sexual assault, etc. to promote open-minded discussions at Duke

**Defining Movement**, *Member*, Duke University

**Sep 2018 - Present**

- Dancing and choreographing routines as part of a diverse team of thirty-one students focused on promoting acceptance, unity, and diversity through dance
- Participating in seven shows during the year to raise awareness and educate audience members on cultures around the world, including the campus renowned Annual Showcase, proceeds benefit Hayti Cultural Center in Durham
- Teaching choreography at dance workshops for the Duke community that encourage self-expression

**Kappa Kappa Gamma**, *Standards Committee Member*, Duke University

**Jan 2019 - Present**

- Encouraging female friendships, leadership, and empowerment through educational programs, activities, and discussion each semester
- Participate in philanthropy through the Reading is Fundamental initiative, reading to school-aged children
- Helping raise approximately \$15 thousand per year through 5k run/walks, bake sales, and trunk shows to send children whose parents are suffering from cancer to a week-long summer camp