Alexander Caines

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Experience

- Bridge to Enter Advanced Mathematics:
  - Teaching Assistant for classes on variations of Euclidean geometry, elementary group theory, and infinite sets during July of 2019.
  - Lead multiple indoor and outdoor activities for groups of fifteen to forty middle-schoolers
  - Utilized exemplary leadership skills during both classroom and extracurricular parts of the camp
- **Languages and Technologies:** Python, Java, C++, HTML5, AngularJS, NodeJS, TypeScript, JavaScript (ES6), Postman, Google Maps API, Bootstrap, MongoDB, Google News API, Git, Amazon Web Services (AWS)
- Software Development:
  - FreeCell: Created an implementation of FreeCell for Software Development, CSCI-209 using Java
  - WarGame: Created an implementation of the game of war for Software Development, CSCI-209 using Java
- Web App Development:
  - Mock Convention (10/2018 - Present):
    - Developed multiple MongoDB API endpoints for querying database.
    - Programmed structure of front end using AngularJS and multiple Bootstrap libraries
    - Contributed to application that displays the most frequent news articles published to Google News given a certain array of key words.
    - Employed strong javascript and html skills by building a full-fledged MEAN Stack Application that represents candidate data for political analysts.
  - Lexicon Networks: FOMP-Webadmin (5/2019-8/2019):
    - Wireframed and developed restaurant transaction reconcilement module, FOMP
    - Put into strong practice NodeJS and AngularJS skills for propagating data from the backend to the front end
    - Used Git to update personal versions of code and eventually merge them with the work of other developers (both in and outside of the country)
    - Exercised fluency in Postman by querying multiple different API endpoints

- **Machine Learning**:
    - Created a variational autoencoder for music generation for CSCI-315, Artificial Intelligence at Washington and Lee University.
    - Exercised flexibility with python libraries by using pydub library to transform audio data for the model
    - Used strong list comprehension skills to manipulate transformed audio data and exercised fluency in keras to tune hyperparameters of model
    - Wrote in depth report of the fallbacks and accomplishments of model
- **Field Work (8/2018)**: Was party of a three member team that conducted research in Cox's Bazar Bangladesh concerning the status and implications of the Rohingya refugee crisis. The project was funded by the Center for International Education at Washington and Lee University.

Education

- Mathematics (BA) and Computer Science (BS) at Washington and Lee University, Class of 2021
- **cGPA: 3.1, Computer Science GPA: 3.2, Mathematics GPA: 3.1**
- **Relevant Courses**:
    - Mathematics: Probability (MATH-309), Linear Algebra (MATH-222), Multivariable Calculus (MATH-221), Abstract Algebra (MATH-321), Complex Analysis (MATH-303)
    - Computer Science: Artificial Intelligence (CSCI-315), Software Development (CSCI-209), Programming Language Design (CSCI-315), Computer Organization (CSCI-210), Introduction to Robotics (CSCI-250)
- **Extracurricular Activities:** Member of track team, competing in the individual 800 and 400 meter dashes as well as the 4x400 meter relay. Won first place in the outdoor and indoor 4x400 relays in both 2018 and 2019. During the 2019 season, won 1st in the indoor 800 and 3rd in the outdoor 800