To whom it may concern,

I am submitting my resume for consideration for the Noblis 2020 Summer Technical Intern position. Commensurate with the skills and experience outlined in my enclosed resume, I believe I possess the skills to be an integral part of this upcoming summer's team of interns.

I'm in my junior year as a double major in mathematics and computer science at Washington & Lee University. Over the past five semesters I've completed a great deal of relevant coursework on linear algebra, multivariate calculus, complex analysis, abstract algebra, probability, introduction to robotics, software development, programming language design, computer organization, and artificial intelligence. In my artificial intelligence class I worked with a group of classmates that successfully created a variational autoencoder for music generation. During the course of this project we used github as our version control, pydub for audio manipulations and transformations, and keras as our machine learning library. In the summer of 2019, I applied the skills learned while interning at Lexicon Networks where I wireframed and designed software for a WebApp to reconcile restaurant transactions. In the process of developing the reconcilement module we used AngularJS and JavaScript for the front end, MongoDB on the backend and Node.js to bind the two. Furthermore, we used Git as the code repository. In the summer of 2019, I also leveraged my math and leadership skills at BEAM where I assisted in teaching college mathematics to underprivileged, gifted middle-schoolers from the boroughs of New York City.

During August of 2018, I volunteered at two Rohingya refugee camps in Southern Bangladesh—on the border with Myanmar. Myself and two other students applied for and won a $20,000 grant to supply Rohingya refugees with much needed supplies. It was a tremendous experience from a humanitarian standpoint and also one that increased my understanding of the implications of geopolitical statelessness.

Finally, I've spent the last year working as a software developer and metadata analyst for the Washington & Lee 27th Mock Convention. The mock convention attempts to predict the candidate that will be selected to run for the presidency by the party that is not occupying the Whitehouse. Working at the 27th Mock Convention has helped improve my skills in verbal and written communication as well as project leadership and team collaboration.

I believe I would make an integral part of the 2020 Summer Technical Intern team. This internship will enable me to further enhance and polish my software development skills via real world experience in the technology industry.

I look forward to hearing from you!

Sincerely,

Alexander Caines

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Experience

- **Languages and Technologies:** Python, Java, C++, HTML5, AngularJS, NodeJS, TypeScript, JavaScript (ES6), Postman, Google Maps API, Bootstrap, MongoDB, Google News API, Git
- **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
- **Mathematics**
  - ○ The Compendium: Created a thesaurus of mathematical statements (theorems, proofs, lemmas, corollaries, and definitions) as well as example problems for MATH-311. During the creation of *The Compendium*, I exercised fluency in LaTeX as well as constructed a rudimentary versioning system for my peers to use (as they were not acquainted with GitHub).
- **Field Work (8/2018)**: Was part 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.
- **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

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), Real Analysis (MATH-311), Geometry (MATH-343)
  - ○ Computer Science: Neural Networks (CSCI-252), 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