

# Andrew Cheung

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## Education

**Stony Brook University** | M.S. in Applied Mathematics and Statistics — 3.8 GPA 2022 - 2024

Relevant Coursework: Analysis of Algorithms, Computational Biology, Computational Geometry, Natural Language Processing, Big Data Systems, Algorithms and Networks, Principles of Parallel Computing, Statistical Learning

**Cornell University** | B.S. in Biological Engineering — 3.8 GPA 2015 - 2019

## Skills

**Languages:** Python, MATLAB, JavaScript, R, C/C++, M, SQL

**Front-End & Back-End:** HTML, CSS, MongoDB, React.js, Express.js, Node.js, Git, REST API

## Work Experience

**Epic Systems** | Madison, WI July 2024 - Present

Technical Solutions Engineer

- Manage teams of 10+ analysts to define organizational goals and implement strategic initiatives that affect over a million users
- Drive adoption of features by analyzing usage trends across customer systems, boosting utility and engagement by 350%
- Develop custom M scripts, debug software, and implement code fixes to resolve issues and improve end-user experience

**Stony Brook University** | Stony Brook, NY August 2022 - May 2024

Research Assistant

- Designed drug targets by simulating biological molecules using Molecular Dynamics to track protein folding and Monte Carlo methods to explore thermodynamically favorable configurations using C++
- Performed data analysis on single-cell RNA-seq data to classify cell subpopulations, utilizing techniques like PCA and t-SNE

**Rockefeller University** | New York City, NY August 2019 - August 2022

Research Assistant - PI: Charles Rice, PhD

- Engineered a modified Powassan virus genome using computational algorithms to increase susceptibility to immune defenses
- Evaluated the safety and efficacy of vaccine candidates in a mouse model and modeled viral kinetics in vivo and in vitro

## Projects

**Moments** | [Github](#)

- Built a social network website using JavaScript with React.js for the front-end, Node.js with Express.js for the back-end, and MongoDB Atlas for secure storage of user profiles and post data
- Developed account creation features supporting personalized profiles and social interaction via posts, comments, and likes

**Mental Health ChatBot** | [Github](#)

- Trained three Llama 2 models as a mental health assistant on data collected from online counseling platforms, synthetic mental health conversations, and Reddit communities to improve response quality
- Evaluated the quality of responses from the fine-tuned and vanilla models using BLEU score on unseen professional responses
- Created a web scraper to collect and preprocess mental health-related text data from Reddit communities

**League of Legends Draft Prediction** | [Github](#)

- Built an end-to-end pipeline to process player and match data fetched from Riot's public API
- Designed a binary classification model to predict match outcomes based on champion team compositions
- Deployed a transformer model to generate drafts based on enemy picks, with performance validated by the outcome model

**Bentley-Ottmann Sweep** | [Github](#)

- Analyzed user-drawn line segments to determine whether they form a closed face or a collection of disjoint trees
- Designed a self-balancing tree data structure to manage the collection of segments for detection of intersections

## Publications

**Cheung A...** MacDonald, M.R., Hoffmann, HH. (2023). Characterization of live-attenuated Powassan virus vaccine candidates identifies an efficacious prime-boost strategy for mitigating Powassan virus disease in a murine model. *Vaccines* 11(3), 612.

Rosain J...**Cheung A...** et al. (2023). Human IRF1 governs macrophagic IFN- $\gamma$  immunity to mycobacteria. *Cell* 186(3), 621-645.