

# Andrew Cheung

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## Education

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

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

- Resolve software issues by developing custom scripts in M, utilizing internal debugging tools, and implementing code fixes
- Enhance end-user experience by designing, developing, and advocating for system enhancements that increase usability and streamline workflows for clients
- Manage teams of 10+ analysts to define organizational goals and implement strategic initiatives that affect over a million users
- Collaborate with cross-functional teams to communicate technical challenges, prioritize tasks, and deliver timely resolutions

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

Research Assistant

- Conducted atomic-level modeling of biological molecules using Molecular Dynamics, Monte Carlo, and Docking (DOCK) in C++
- Applied predictive modeling to identify early-stage cancer cells using protein/gene expression and spatial positioning data

**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 user account registration features, allowing personalized profile creation and enabling interaction with content through posting, commenting, and liking

**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

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

- Analyze user-drawn line segments and determine whether they form a face or a forest of trees
- Designed a self-balancing tree data structure to store vertices for optimal performance in detecting intersections

## Publications

**Cheung A...MacDonald, M.R., Hoffmann, H.H.** (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.