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
- Modeled protein folding and explored favorable molecular configurations for novel drug candidates using Molecular Dynamics and Monte Carlo methods implemented in 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
- 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

League of Legends Draft Prediction | Github
- Built a full-stack Flask app using Riot's API to generate winning team comps via ML models trained on 45,000 matches
- 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

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

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

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-γ immunity to mycobacteria. *Cell* 186(3), 621-645.