Elaine Liu

3 Ames St., Cambridge, MA 02141
781-960-5775 eliu24@mit.edu linkedin.com/in/siyu-elaine-liu

Education

Massachusetts Institute of Technology **Sep. 2020 – May 2024**
Bachelor of Science in Mathematics with Computer Science. GPA: 5.0/5.0 *Cambridge, MA*

Relevant Coursework: Optimization Methods, Intro to Machine Learning, Design and Analysis of Algorithms, Probability, Theory of Computation, Real Analysis, Abstract Algebra (I & II), Multivariate Calculus

Technical Skills

Technical: Python, Java, LaTeX

Experience

Media Lab **Sep. 2020 – August 2021**
Undergraduate Researcher at Personal Robotics Group *Cambridge, MA*

- Developed an automatic suicide risk evaluation system using statistical analysis and feature selection.
- Extracted, cleansed, and analyzed real-world raw eye and head movement data from videos.
- Identified the top 12 facial bio-markers of suicide risk to be used in clinical settings ($> 97\%$ accuracy with MLP and SVM classification, far exceeding the 42.4 % in similar studies).
- Collaborated with a partner using Git and first-authored conference paper to be submitted to AAAI-22.

Web Information Processing Laboratory **August 2021**
Research Intern *Beijing, China*

- Implemented keyword and username-search using Twitter API to gather public tweets related to Covid vaccines.
- Explored word segmentation and implemented vectorization of Chinese tweets using part-of-speech labelling.
- Explored Tensorflow and built a model to classify for sentiment towards the Covid vaccines.

Honors and Achievements

European Girls' Mathematical Olympiad: Bronze Medalist (2019), Honorable Mention (2020)
Math Prize for Girls Olympiad: Silver (2019), Bronze (2018) Medalist
United States of America Mathematical Olympiad: Qualifier (2018)
Asia-Pacific Mathematical Olympiad Qualifier: Two-time qualifier (2020 & 2019)

Projects

Linguistic Sexism in the Gaming Community | *Python, OCR, Sentiment Analysis* **August 2019 – May 2020**

- Conducted ethnographic data collection to record interaction among *League of Legends* players.
- Leveraged Optical Character Recognition API in Python to capture text-based conversations.
- Constructed context-specific dictionary and computed sentiment of each line of exchange.
- Evaluated levels of linguistic sexism among players of different ranks using ANOVA and T-tests.
- Paper published in *The Young Researcher* in August 2020.

Curling Stone Trajectory Analysis | *Personal Project* **Feb. – May 2019**

- Modelled trajectories of different curling shots and analyzed the effects of sweeping with data collected on ice.
- Achieved 95% accuracy under near-ideal scenarios.

Political Language Analysis | *Appleby College* **April – June 2019**

- Quantified and established correlation between linguistic complexity and political tendency in a news article.

Leadership / Extracurricular

Next House Social Committee, MIT Undergraduate Association, Stanford University Math Camp (SUMaC 2019), Canada/USA Mathcamp 2018