Andrew Liu

Email: andrew.bo.liu@gmail.com | Phone: 650-223-5567

Education and Academic Awards

Harvard University, Cambridge, MA   **Class of 2023 (anticipated)**

- <u>Ph.D.</u> Bioinformatics and Integrative Genomics.
- <u>Fellow, Emerging Leaders in Biosecurity (ELBI)</u>, Center for Health Security, Johns Hopkins University, 2021 (selected as one of 30 fellows from government, industry and academia worldwide based on contributions to biosecurity and pandemic preparedness).
- <u>Lynch Foundation Fellow</u> in Systems Biology at Harvard Medical School, 2022.

Harvard University, Cambridge, MA   **Class of 2015**

- <u>S.M.</u> Computer Science. GPA: 3.92.
- <u>A.B.</u> Math. GPA: 3.81. Elected *Phi Beta Kappa* and *John Harvard Scholar* (top five percent of class).
- <u>Three-time Teaching Fellow:</u> Machine Learning, Economics and Computation, and Mobile Software.

Selected Work Experience

PhD Student (Bioinformatics), Harvard Medical School – Cambridge, MA   **Aug 2018-Present** Full-time

<u>Publications</u>

Liu AB, Davidi D, Springer M, et al. 2022. "Association of COVID-19 Quarantine Duration and Postquarantine Transmission Risk in Four University Cohorts." JAMA (Journal of American Medical Association) Network Open.

- Co-led design and execution of this 12-author study to determine optimal COVID-19 quarantine length.
- Collaborated with researchers from four universities to collect COVID-19 test data and revise the publication.
- Led the statistical analysis of test data in the R programming language, interpretation of implications for quarantine duration, and drafting of the publication. Facilitated the publication through peer review.

Alley EC, Turpin M, *Liu AB*, Kulp-McDowall T, Swett J, Edison R, Von Stetina S, Church GM, Esvelt KM. 2020. "A machine learning toolkit for genetic engineering attribution to facilitate biosecurity." Nature Communications.

- As middle author, developed and evaluated a machine learning method for second-order attribution: the identification of the lab of origin for a pathogen found in the wild.

Gretton D, DeBenedictis EA, *Liu AB*, Yao AC, Esvelt KM. 2020. "Random adversarial threshold search enables specific, secure, and automated DNA synthesis screening." SecureDNA.

Software Engineer and Operations, OpenLabs – Palo Alto, CA   **Sep 2020-Apr 2021** Full-time

- Served on a four-person software and operations team that surveyed 1.3 million+ respondents over three months to measure the persuasiveness of 800+ political TV ads in the 2020 U.S. presidential election.

Technical Consultant, Bipartisan Commission on Biodefense   **Sep 2020-Nov 2020** Part-time (8h/wk)

- Served on a 10-person team that identified 15 technology priorities to stop future pandemics in "The Apollo Program for Biodefense" report, which recommended that the federal government invest $10 billion annually in R&D on these priorities. 14 of these 15 priorities were subsequently adopted in President Biden's American Pandemic Preparedness Plan, which proposed $65.3 billion of investment in these priorities over 7 to 10 years.
- For the report, co-led the literature review of 139 biodefense-related papers from scientific databases (e.g. PubMed) and government repositories (e.g. Homeland Security Digital Library).

Biostatistician, Khatri Lab, Stanford Medical School – Stanford, CA   **Aug 2017-Aug 2018** Full-time

<u>Publications</u>

Warsinske HC, *Liu AB*, Khatri P, et al. 2018. "Assessment of Validity of a Blood-Based 3-Gene Signature Score for Progression and Diagnosis of Tuberculosis, Disease Severity, and Treatment Response." JAMA Network Open.

- Analyzed gene expression and clinical data and contributed to drafting the publication.

Azad TD, Donato M, *Liu AB*, Khatri P, et al. 2018. "Inflammatory macrophage–associated 3-gene signature predicts subclinical allograft injury and graft survival." Journal of Clinical Investigation Insight.

Software Engineer, Platform Team, Udacity – Mountain View, CA   **Apr 2016-Aug 2017** Full-time

- Developed and maintained software underlying udacity.com's authentication service in the Go programming language, enabling 1+ million Udacity users to login and manage accounts smoothly. Used Segment and DataDog to rapidly identify, diagnose and fix bugs.

Algorithmic Trading Intern, Jump Trading – Chicago, IL

**Jun 2012-
Aug 2012**
Full-time

- Researched and developed trading strategies for equity futures in the R programming language.

Research Publications, Invited Talks and Awards

Publications

See "Selected Work Experience."

Invited Talks/Interviews

- Center for Communicable Disease Dynamics Meeting, Harvard School of Public Health, Boston, MA. "Quantitatively assessing early detection strategies for mitigating COVID-19 and future pandemics." **2023**

- Journal of American Medical Association Network Open Conversations Podcast. "Association of COVID-19 Quarantine Duration and Postquarantine Transmission Risk in 4 University Cohorts." **2022**

- Dartmouth ENGS 6: Technology and Biosecurity, Dartmouth College, Hanover, NH. "Attribution of genetic engineering: A practical and accurate deep-learning toolkit for biosecurity." **2020**

Notable Awards

- Intel Science Talent Search, National Finalist (top 40 of 1744 students) for genomics project identifying pathways in transplant rejection from gene expression data. **2011**

- Siemens Competition for Math, Science, and Technology, 5th place nationally (of 2033 students); talk here. **2010**

Language and Other Skills

Languages: Mandarin Chinese (beginner), Spanish (beginner).

Citizenship: U.S. citizen.