

SAMMY MUSTAFA

BOSTON, MA | 201-957-4754 | sammymustafa@hms.harvard.edu

AI Engineer

[LinkedIn](#) | [Website](#) | [GitHub](#)

EDUCATION

Harvard Medical School | Boston, MA

Expected Dec 2024

MS in Biomedical Informatics | GPA: 4.0

- **Ongoing Capstone:** Predicting Future Depressive Biotypes from resting-state fMRI with Generative Embedding

Northwestern University | Evanston, IL

Jun 2023

BA in Computational & Systems Biology, Data Science, and Linguistics | GPA: 3.93 (Dean's List 8/9)

- Honors Program in Medical Education (**HPME**): 7-year BA/MD program

Relevant Coursework: ML for Computational Biology (MIT), Computational Psychiatry (ETH Zurich), Computational Biomedical Statistics, RNA Sequencing, Functional Genomics, Bioinformatics, Biostatistics, Text Processing

Activities: Global Climbing Initiative, Graduate Consulting Club, Mountaineering Club, Camp Kesem, West End Garden

SKILLS

Languages: Python, R, SQL, Linux, C, MATLAB, HTML, JavaScript

Technologies: PyTorch, TensorFlow, Git, API, NLP, PCA, GWAS, Pandas, HPC, spatial models

Additional Skills: Spanish (Intermediate), Arabic (Intermediate), Photography, Climbing

PROFESSIONAL EXPERIENCE

Data Scientist | *Behavior* | Pittsburgh, PA

Sep 2023 – Present

- Implementing predictive supervised and unsupervised models on 200k+ wearable datasets to predict cravings
- Defining novel baselines and correlations for wearable devices supporting patients in addiction recovery

Associate Consultant | *H2Ok Innovations* | Boston, MA

Sep 2023 – Present

- Scaling application of artificial IoT-enabled industrial liquid optimization across top-tier Fortune 100 enterprises
- Project leader: formulating entry into \$14 billion semiconductor market with strategic pricing sensitivity analyses

Strategy Consultant | *Mercurial-AI* | Chicago, IL

Mar 2023 – Aug 2023

- Developed and implemented strategic and operational changes that successfully secured \$500k in seed capital
- Project manager: overlooked deep ensemble/casual framework personalizing breast cancer treatments

RESEARCH EXPERIENCE

Research Fellow | *Center for Precision Psychiatry, Mass General Hospital* | Boston, MA

Oct 2023 – Present

- Leveraging the largest fMRI and genomic dataset to define the neuroanatomical underpinnings of depression
- Identifying and validating brain-based depression biotypes via clustering based off 4,000 neuroimaging features
- Developing novel methodologies to maintain neuronal spatial information in imaging data via 3D deep learning

Research Fellow | *Vaughan Lab, Feinberg School of Medicine* | Chicago, IL

Mar 2021 – Jun 2023

- Probed the RNA-binding protein SERBP1 to combat PAI-1 induced fibrosis, senescence, aging, and Alzheimer's
- Developed a novel, transgenerational epigenetic method of prion-mediated PAI-1 destabilization via CRISPR

Research Assistant | *Behavioral Research Lab, Yale University* | New Haven, CT

Mar 2022 – Jul 2022

- Collaborated with an inter-institutional team investigating negotiation strategies between buyers
- Probed, over 6,000 minutes of negotiation data and discerned optimal linguistic behaviors via Python NLP

PUBLICATIONS & PROJECTS

- Exploiting ML Conformational Ensembles for Optimized Pharmacophore Drug-Ligand Dynamics (**MIT CSAIL**)
- Leveraging First-Degree Relative Panomic Data in CNNs for Advanced Mental Health Diagnostics
- NLP Techniques for Predictive Classification of Large-Scale Medical Abstracts
- Multi-model Regression Machine Learning Analysis: Predicting Cancer Mortality Rates in US Counties
- *Language of Bargaining*
- *SERBP1: Exploiting RNA-Binding Protein-Mediated PAI-1 Inhibition*
- *PTENP1: A Pivotal Pseudogene in Glioblastomas*

AWARDS

2nd Round of Penn Healthcare Case Competition

Selected Venture @ Harvard Innovation Lab

2nd Place – Biochemistry, BCA Research Exposition

HPME (2021) and Weinberg (2022) Summer Research Grants

Regeneron Science Talent Search Scholar

Thermo Fisher Scientific Antibody Scholarship (\$5,000)