SAMMY MUSTAFA

AI Engineer

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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
- **Relevant Coursework:** ML for Computational Biology (MIT), Computational Biomedical Statistics, Computational Psychiatry (ETH Zurich)
- **Activities:** Harvard Graduate Consulting Club, Harvard Biotech Club, Harvard Innovation Labs, Camp Kesem

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:** RNA Sequencing, Functional Genomics, Bioinformatics, Biostatistics, Text Processing

SKILLS

Languages: Python, R, SQL, Linux, C, MATLAB, HTML, JavaScript
Technologies: PyTorch, TensorFlow, Git, EHR, NLP, PCA, GPU/HPC, API
Additional Skills: Spanish (Intermediate), Arabic (Intermediate)

RESEARCH EXPERIENCE

ML Researcher | *Center for Precision Psychiatry, Mass General Hospital* | Boston, MA *Oct 2023 – Present*

- Leverage the largest fMRI and genomic dataset to define the neuroanatomical underpinnings of depression
- Identify and validate brain-based depression biotypes through clustering of 4,000 neuroimaging features
- Design novel methodologies to preserve neuronal spatial information in imaging data using 3D deep learning

Molecular Biology Researcher | *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

NLP Researcher | *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 using Python

PROFESSIONAL EXPERIENCE

Data Scientist | *Behaivior* | Pittsburgh, PA *Sep 2023 – Present*

- Implement predictive supervised and unsupervised ML models on 200k wearable datasets to predict cravings
- Define novel baselines and detection correlations in wearable devices supporting patients in addiction recovery

Associate Consultant | *H2Ok Innovations* | Boston, MA *Sep 2023 – Present*

- Scale application of artificial IoT-enabled industrial liquid optimization across top-tier Fortune 500 enterprises
- *Project leader*: conduct strategic market and pricing sensitivity analyses targeting a $14 billion market entry

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

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)