SAMMY MUSTAFA

AI Researcher | Strategist

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LinkedIn | GitHub | Website

EDUCATION

Harvard Medical School | Boston, MA *Dec 2024*
MS in Biomedical Informatics | GPA: 3.97

- **Relevant Coursework:** ML for Computational Biology (MIT), Single Cell Analysis, Health Law & Policy (HLS), Affective Computing (MIT Media Lab), Building Successful Enterprises (HBS), Rare Genetic Disease Diagnostics
- **Activities:** Harvard Biotech Club, Harvard Innovation Labs, Harvard Graduate Consulting Club, 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 with Feinberg School of Medicine
- **Relevant Coursework:** Data Science I-III, Data Visualization, Text Processing, Bioinformatics, Biostatistics

DATA SCIENCE EXPERIENCE

Founder & CIO | *Bond Health* | New York, NY *Jan 2024 – Present*

- Develop pipeline and proprietary LLM infrastructure to enable hyper-accurate clinical trial patient recruitment
- Direct pilots with three clinics to improve patient screening, recruitment, retention, and diversity in clinical trials
- $150K+ total investments from CEAS Investments, Harvard Innovation Labs, MIT Sandbox, and NSF I-Corps

ML Researcher | *Center for Precision Psychiatry, Mass General Hospital* | Boston, MA *Dec 2023 – Dec 2024*

- Developed a metabolomics framework for an accessible/severity-stratified approach for MDD early detection
- Conducted multivariable regression models revealing lipid-driven metabolic patterns reflecting MDD phenotype
- Engineered mutual information network pipelines to isolate informative metabolic biomarkers from 250+ features

Data Scientist Internship | *Behaivior* | Remote *Sep 2023 – Dec 2023*

- Implemented RNNs and random forests on 100+ parameter, 200k physiological datasets to predict cravings
- Leveraged label propagation algorithms for improved scikit-learn clustering (15% gain in model precision)
- Improved Cypher algorithm efficiency for accelerated real-time anomaly detection in patient wearable devices

LEADERSHIP EXPERIENCE

Associate Consultant Internship | *H2Ok Innovations* | Boston, MA *Oct 2023 – Dec 2023*

- Scaled application of artificial IoT-enabled industrial liquid optimization across top-tier Fortune 500 enterprises
- *Project manager*: conducted strategic market and industry sensitivity analyses for a $14 billion market entry
- Enhanced revenue generation by 25% through tailored, client-specific pricing models from competitive analyses

Strategy Consultant | *Mercurial-AI* | Chicago, IL *Mar 2023 – Aug 2023*

- Developed and implemented strategic operational changes that successfully secured $300K+ in seed capital
- *Project manager*: overlooked deep ensemble/casual framework personalizing breast cancer treatments
- Conducted competitive landscape and market sizing analyses to inform AI-driven oncology product positioning

PUBLICATIONS & PROJECTS

Evaluating Pain Assessment and Management Disparities in Acute Pancreatitis – MIT

- Exposed racial and gender inequities in opioid prescribing, treatment delays, and pain relief outcomes in the ED
- Analyzed ~15k clinical records to design metrics capturing pain documentation and treatment response patterns

A Medico-Legal Approach to Subjective Pain Testimony in Disability Adjudication – Harvard Law School

- Uncovered systemic mishandling of subjective pain testimony by administrative law judges in disability rulings
- Proposed coalition-led reforms leveraging CMS quality surveys to standardize pain documentation for legal use

SERBP1: Exploiting RNA-Binding Protein-Mediated PAI-1 Inhibition – Feinberg School of Medicine

- Developed a transgenerational epigenetic method of prion-mediated PAI-1 destabilization for cardiac fibrosis
- Compared gene expression patterns with and without SERBP1 treatment *in vitro* via PCA on RNA-Seq data in R

AWARDS

Regeneron Science Talent Search Scholar
MIT $100K Entrepreneurship Competition Semifinalist
$5,000 Thermofisher Scientific Scholarship Winner
$10,000 HPME and Weinberg Research Grants

SKILLS

Languages: Python, R, SQL, C++, Cypher, MATLAB, HTML, JavaScript
Technologies: PyTorch, TensorFlow, Git, Linux, Figma, DL, RL, NLP, API
Additional Skills: Spanish (Intermediate), Arabic (Intermediate), Photography