Vaishnavi Moturi

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High school student passionate about AI for illnesses and disorders of the brain and evaluating domestic and global public health policy.

Skills

- **Fluent in Python, Java, and Matlab**
- **Artificial Intelligence and Machine Learning**
- **Biology enthusiast**

Experience

Freelance Journalist
Mar 2023 - PRESENT

https://medium.com/@vaishnavi.moturi

Founder and Editor-in-chief of Project YouthImpact
Dec 2022 - PRESENT

Global youth public health and science literary nonprofit aims to spread public health literacy and cutting-edge science advances amongst the youth while encouraging the creation of innovative ideas to improve domestic and global public health systems.

Teenagers share their experiences with local public health crises and the faults of the existing systems. They share their medical journeys and ideas to improve the journeys for future generations.

Governor's Science and Technology Champions Academy
July 2023 - July 2023; 1 week

As a Texas Science and Engineering Fair Champion, I received a $2000 grant from the Texas Workers Commission to conduct research at SMU at the BAST lab.

Massachusetts General Hospital Mind Data Science Lab
Dec 2022 - PRESENT

Working under Dr.Sudeshna Das, assistant professor of neurology at Harvard Medical School, with sn-RNA-SEQ data to segment nerve cells (microglia, astrocytes)

Contributor for Alzheimer's DataLENS, a Massachusetts General Hospital portal for data visualization of -omics data. Learned about Single Cell RNA-sequencing data and working with data analysis of -omics datasets

- Contributor to the ADProgressionAtlas development

Developed public health web applications (https://github.com/vaishnavim9) including a COVID-19 vaccine distribution tracker and visualization of cancer prevalence

UT Southwestern Medical Center Advanced Imaging Research Center

July 2022 - PRESENT, Dallas, TX

Developing a machine learning pipeline to predict glioblastoma therapy response using deep learning and unsupervised clustering algorithms from imaging, pathological, and biomarker data under Limin Zhou and Dr. Ananth Madhuranthakam, Ph.D.

- Coded and implemented Machine learning pipelines (using Python, Jupyter, SciKit-Learn, MRI Deep Learning frameworks including Pydec) that enabled us to iteratively improve the accuracy.
- Recommended incorporating multi-omic data (1st version included just MRI voxel data, later versions have been improvised by adding the patient profiles and genetic mutations)
- Employed unsupervised, supervised, and deep learning algorithms including DEC (Deep embedded clustering). Features extracted from T1-weighted/ASL MRI images using PyRadiomics
- The outcome gave us good insights into the early identification of therapy response and provided them with another tool for personalized/precision treatment.

UTD's Neuroaudiology and Prosthetic Hearing Lab / Computational Researcher

June 2022 - PRESENT, Dallas, TX

Cochlear Implant Processing Study

- Working under Dr. Kelly N. Jahn, Ph.D.
- Led a project to understand the effects of CI processing on emotional valence and arousal in response to environmental sounds
- Presented at the Nanoexplorers Program Symposium
- Will be presenting at CI2023 Conference
- Accepted as top 20% of submissions for the Poster Highlight Presentation for CI2023 Conference
    - Youngest 2023 ACI Alliance student scholarship award recipient and youngest presenter to ever present at the ACI Cochlear Implant Conference

UTD's Lifespan Neuroscience and Cognition Lab / Remote Researcher

March 2022 - PRESENT, Dallas, TX

Co-conducted a literature search for an fMRI meta-analysis regarding studies involving cognition (specifically memory control, task switching, inhibition, and executive control) under Dr. Chandramallika Basak.

- Co-Author for a talk in *Memory and Cognition* for *Psychonomics Society*
- Co-Author for talk at DACC Conference (Dallas Aging and Cognition Conference)

Currently working on a chapter review on the effects of cognitive training on different stages of Alzheimer's' disease.

- Will be published in Encylopedia Biology in July

Currently leading an independent project to evaluate the impacts of various predictors of Alzheimer's' disease including blood pressure, hippocampal volume, and socioeconomic status.

- Expecting First-Author Publication in Brain or eLife

Education

Fowler Middle School / Grades 6-8

4.0 UW GPA

Centennial High School / Sophomore (Grade 10)

Currently ranked 6th out of over 530.

4.0 UW GPA

Relevant Coursework: AP Biology, AP Statistics, AP Physics 1, AP Computer Science A

Awards

Fowler Middle School

I spearheaded a project in which I created an Artificial Intelligence model to detect chest anomalies from X-Rays (using a data set from Stanford University). This project won **2nd place at the Dallas Regional Science Fair and special recognition from the Health Physics Society**. Furthermore, this project qualified for Broadcom Masters. Due to COVID, this project was unable to compete at the Texas Science Fair.

After years of dedicated preparation, I placed top **ten in the state TMSCA (Texas Mathematics and Science Coaches Association)** competition (for mental math and general math). This was after qualifying from the regional, and district rounds.

Two years of experience in the Academic Pentathlon team (the first year's competition was canceled due to COVID). In my second year competing, I placed **2nd in the region** (outcompeted hundreds of middle schoolers across Frisco ISD).

Centennial High School

1st Place Champion @ Youth Financial Analysts Competition (YFAC) 2022

- Global stock pitch competition for high school students
- Analyzed Johnson and Johnson through a thorough analysis of its financial and ESG profile. Compiled a 14-page research paper as well as a ten-minute pitch to defend my thesis.
- Gained a thorough understanding of the opioid crisis in America
- Placed 1st out of hundreds of teams across the globe

Conferences

- Youngest Scholarship Recipient @ CI2023 and Accepted as Poster Highlight Presentation (top 20%)
    - Youngest ever to present at an ACI Conference
    - Presented my research on emotional responses to

environmental sounds for Cochlear Implants Users
- NanoExplorers Symposium 2022
  - Presented my research to 10+ faculty members and students at UT Dallas
- Sigma Xi Conference 2023
  - GlioGuide Accepted into the conference
  - Link: https://projectboard.world/sigmaxi/project/glioguide-optimal-treatment-prediction-in-glioblastoma-via-computer-vision-of-tumor-heterogeneity?rc=jbmeaazy

Science Fair Awards

2023:

- 2nd Prize in Translational Medical Sciences DRSEF
  - $200 in cash prize
  - Advanced to TXSEF Fair
- 2nd Prize in Biomedical and Health Science TXSEF
  - Accepted to the Governors Science and Technology Champions Academy as a TXSEF Champion
- Abstract accepted at Sigma XI Conference

2020

- 2nd Prize in Robotics and Intelligent Machines DRSEF 2020: *Building an AI Model to Detect Chest Anomalies*
- TXSEF State Finalist
- Broadcom Masters Qualified

Scholastic Writing Awards

- South Region At Large Silver Key for Journalism: *Brain-Machine Interfaces and The Way Forward* (2023)

NCWIT DFW Winner 2023

- Awarded based on aptitude and aspirations in technology and computing, as demonstrated by computing experience, computing-related activities, leadership experience, tenacity in the face of barriers to access, and plans for post-secondary education

Top 10% of 3000+ Submissions in the Breakthrough Junior Challenge 2022

- Created a video on Entropy