

# Murtaza Husain

109 Paloma Point, 78628, Georgetown, Texas  
☎ (512)-284-3505 — 🌐 GitHub — ✉ murtazahusain@utexas.edu

---

## Education

### University of Texas at Austin

Class of 2026

Senior, BS Computational Physics, BS Astronomy, Minor Computer Science  
College of Natural Sciences GPA: 3.88 University Honor Roll

---

## Experience

**Creative 3D Technologies - Semiconductor Science Intern** June 2026 - August 2026  
(In Progress) Conducted research on affordable, novel semiconductor manufacturing techniques with the goal of creating an industry-disrupting semiconductor fabrication machine. Mainly, work included researching and creating EUV lithography light sources. Tasks also involved using Solidworks, writing hardware interface code in C/C++ and keeping detailed technical documentation on the EUV apparatus.

**Palindrome Research Labs Datacenter Engineer** March 2026 - Present  
Setting up end-to-end LLM inference and training server using 32 gpus. Work includes distributed computing and networking multiple computing nodes, parallelizing large models across nodes, configuring remote access for maintenance, and creating documentation for use. Clusters are planned to be used by national labs for graph neural network and PIC simulations, as well as general consumers for LLM API endpoints.

**TAU Systems Machine Learning Engineer** June 2025 - Present  
Creating RAG and agentic AI systems for laser wakefield acceleration literature search and beamline design. Created an AI literature search system built on AWS services such as S3, Bedrock, and EC2. Work includes using LangChain and LangGraph as well as data mining scientific literature surrounding LWFA and managing database structures.

**Relativistic Quantum Dynamics Group - Undergraduate Researcher** May 2025 - Present  
Working with the Hegelich group for high energy density physics, mostly focusing on machine learning applications within laser wakefield acceleration. Work includes training with optics equipment, creating laser experimental setups, and using high-performance computing like the TACC supercomputer to run laser-plasma physics simulation code.

**CosmicAI Faculty-led Research** May 2024 - May 2025  
Conducted research as a CosmicAI institute undergraduate researcher under the UT Austin Artificial Intelligence research lab with applications in Astronomy. Worked under faculty belonging to the UT Austin computer science, computational linguistics, and computational astrophysics departments. Research paper was submitted and accepted to NeurIPS.

**NVG8 - Machine Learning Intern** May - September 2023  
Deployed LLMs from scratch on local hardware, collected data to fine-tune models, and ran fine-tuning on a multi-GPU cluster. Applied customized models for workflows needed by Austin-based decentralized data company, NVG8. Worked as part of a small team and effectively carried out technical projects, research projects, and led an LLM technology demo presented to Boeing.

**Freelance Discord Bot Creation** December 2022, May - June 2023  
Created a Discord bot for use with the Dropbox API, integrating file and image uploading and manage-

ment for professional settings. Also created a Discord-Asana integration bot for professional use in team communications. Process involved using multiple APIs for integration with Discord.

**Crypto Mining Rig Assembly and Maintenance Contract** May - August 2021  
Scratch assembled and maintained crypto mining rigs for a customer, starting from open frame selection to the most cost-efficient GPU choice, PCIe-bus extension, and installing crypto-oriented operating systems. Rigs were deployed in shipping containers adapted as data centers and used for Ethereum mining. Provided full end-to-end service.

---

## Research and Publications

**AstroVisBench: A Code Benchmark for Scientific Computing and Visualization in Astronomy** May 2025  
Accepted at NeurIPS, the highest-profile conference for artificial intelligence in the United States.  
<https://arxiv.org/abs/2505.20538>

**Cosmic Horizons Conference Poster Presentation** 26 May 2025  
Presented research poster and gave brief talk at the inaugural Cosmic Horizons conference as a student researcher at the CosmicAI institute. Research poster was centered on work with the UT Austin astronomy and AI faculty, leading to a publication.

## Skills & Accomplishments

- Fluent in **English** and Urdu. Learning Turkish, Spanish, and Punjabi.
- Certified for **AutoCAD** and **Inventor**. Familiar with **SOLIDWORKS**.
- Significant coding experience in **Java, Python, Simulink, ROBOTC, Solidity, MATLAB, Javascript, and Mathematica**. Produced Jupyter notebooks in Python for astronomical data science and **LLM** training pipelines.
- Experience in formatting and typing in Markdown and **LaTeX**, and **HTML/CSS for webpages** and formatting.
- Adept in using Digital Audio Workstation software such as **REAPER**. Developing audio processing extensions in **C++** using the **JUCE** framework.
- Skilled in computer machinery use including **CNC machines, laser cutters, and 3D printers**.
- Tech **Writer** for Artificial Intelligence Magazine, Cognitive Times.
- Skilled drummer. Have **performed at live concerts** in the Austin area. Acoustic, electric (6 and 7 string), and bass guitarist.

## Self-Learning and Certifications

<b>Computer Systems: A Programmer's Perspective (In Progress)</b>	Textbook (Bryant and O'Hallaron,)
<b>The C Programming Language</b>	Textbook (Kernighan and Ritchie)
<b>Fundamental Principles of Optical Lithography</b>	Textbook (Chris Mack)
<b>High Power Laser-Plasma Interaction</b>	Textbook (Liu et. al)
<b>Autodesk Inventor Professional Certification</b>	Autodesk
<b>Autodesk Autocad Professional Certification</b>	Autodesk

## Activities & Honors

**Introductory Astronomy at Alif Laila** December 2025 - Present  
In the process of creating an introductory astronomy course as well as a remote-access observatory with

telescope and computer controls in Texas for underprivileged children in Pakistan. <https://murtato1.github.io/remote-telescope/>

**Austin Computer Museum - Junior Curator** June 2022 - June 2024  
Receive, catalog, and restore important computers and computing history memorabilia for the planned museum.

**UT Austin Astronomy Students Association** January 2025 - Present  
Attended meetings with peers in the astronomy department and engaged in extracurricular astronomy activities.

**UT Austin International Affairs Society** August 2022 - Present  
Participated in meetings and attended events for the International Affairs Society, including attending guest lectures.

**Georgetown University - International Leadership & Business Internship** July - August 2021  
Participated in leadership initiatives involving entrepreneurs worldwide after receiving a teacher recommendation.

**Liberty Hill Bionic Panthers Robotics Team - Captain and Lead Programmer** 2018 - 2022  
Member of inaugural FIRST Robotics team. Went to state thrice for BEST Robotics, twice as Captain, and contributed to build, design, driving, notebook, and spirit teams as well as leading the programming team. Ranked top 10 BEST Robotics team in Texas for 2017 and 2019. Worked on mechanical, electrical, and software engineering elements as well as on delivering the presentation.

**Liberty Hill High School Speech and Debate Team - Vice President** 2018 - 2022  
Competed across Texas against schools in extemporaneous speech and policy debate competitions. Multiple-time district competition winner and state competitor for both events and multiple first-place wins at regional competitions, UIL competitions, and TFA competitions.

**National Honor Society** 2019 - 2022  
Participated in volunteer work through the LHHS NHS program.

**Stanford University Summer Session Course** June - July 2021  
Machine Learning Course: Minds and Machines

**MIT Beaver Works Courses** Jan - April 2021  
Participated in BWSI Courses for Python Programming and Serious Game Design

**Columbia University (NY) Summer Immersion Program** June - July 2020  
Successfully completed an Introduction to Java course and applied Java to multiple projects

**Brown University STEM Summer Program** June - July 2018  
Explored space technology and its applications to extraplanetary geographical information systems (GIS)