

Gaukhar Nurbek

gaukharanurbek@gmail.com | [LinkedIn](#) | [GitHub](#) | [Portfolio](#) | [Google Scholar](#)

EDUCATION

University of Texas RGV

PhD Computer Science

- Thesis Focus: Machine Learning-driven Signal Processing and Time Series Data Analysis for Gravitational Wave Detection from Supernova Events.

May, 2028

Edinburg, TX

University of Texas RGV

MS Computer Science, GPA: 4.0/4.0

May, 2024

Edinburg, TX

University of Texas RGV

MS in Interdisciplinary Studies in Science and Technology, GPA: 3.93/4.0

May, 2021

Brownsville, TX

Kazakh-British Technical University

BEng Information Systems, GPA: 3.5/4.0

May, 2018

Almaty, Kazakhstan

PUBLICATIONS

- Search for core collapse supernovae signals in LIGO's third observation run using a network of gravitational wave detectors integrated with a multiclass convolutional neural network. Shahrear K. Faisal, **Gaukhar Nurbek**, Michael Benjamin, Bhawana Sedhai, and Soma Mukherjee, *Phys. Rev. D* 110, 064055, 2024.
- Study of efficient methods of detection and reconstruction of gravitational waves from nonrotating 3D general relativistic core collapse supernovae explosion using multilayer signal estimation method. Soma Mukherjee, **Gaukhar Nurbek**, and Oscar Valdez, *Phys. Rev. D* 103, 103008, 2021.

WORK EXPERIENCE

University of Texas RGV

Graduate Research Assistant

Edinburg, TX

Sept 2024 – Current

- Developing AI-driven data pipelines for gravitational wave detection, improving signal classification accuracy **Python**, **PyTorch**.
- Analyzing large-scale time-series datasets using statistical modeling, machine learning techniques, and data preprocessing for feature extraction.
- Collaborating with astrophysicists to integrate advanced ML methodologies into astrophysical signal detection.
- Developing an **LLM benchmarking time series** dataset, improving performance analysis and optimization for large language models using **Python**.

Graduate Research Assistant

Aug 2023 – May 2024

- Designed and implemented reinforcement learning models for 3D locomotion simulations using **Temporal Graph Neural Networks** and tools like **Python**, **PyTorch**, **PyTorch Geometric**, **MuJoCo**.

Uber

Software Engineering Intern

Sunnyvale, CA

May 2023 – Aug 2023

- Developed a key feature for an internal tool serving 10-15k weekly users using **Go** and **TypeScript**.
- Improved user experience by delivering features on schedule and implementing comprehensive unit tests in **Go**.
- Participated in the design, writing a documentation, coding, testing, and deployment phases of the feature.

University of Texas RGV

Staff Research Assistant

Edinburg, TX

July 2021 – July 2022

- Improved signal detection algorithm by 5% and conducted gravitational waves data analysis using **MATLAB**, **C++**, **Python**, and **Bash**, supported by NSF grant.

Graduate Research Assistant

August 2019 – May 2021

- Optimized the data analysis pipeline using deep learning algorithms for image classification and signal processing, achieving 80% noise reduction using **MATLAB**, **Python** and **Bash**.

Kazdream Technologies

Data scientist

Astana, Kazakhstan

May 2019 – August 2019

- Trained a deep learning model to convert multilingual human speech to text, processing 200k audio data samples using **Python**, **Pandas**, **NumPy**, **wav2letter**, **Docker** and **CUDA**.

Center for Sustainable Capital Development

Data analyst

Astana, Kazakhstan

August 2018 – February 2019

- Built a time series regression model achieving 90% accuracy using **Python** and integrated it into a web application with **Flask**, **HTML/CSS/Bootstrap**, and **JavaScript**.
- Implemented a web crawler and processed 1 million rows of data using **Python**, **Selenium**, **Beautiful Soup**, and **SQL**.

PROJECT EXPERIENCE

ML Interview Prep Tutor — Personal Project

June 2024

- Developed an interactive ML interview preparation chatbot with **Python, Django, Langchain, OpenAI API**.
- Designed and optimized a **vectorized knowledge base** to improve model response accuracy.

TEACHING EXPERIENCE

Graduate Teaching Assistant

Fall 2022 - Spring 2024

- Conducted weekly office hours, led coding labs, and graded assignments for undergraduate and graduate courses in **Deep Learning, Reinforcement Learning, and Object-Oriented Programming**.
- Provided **mentorship and debugging support** to over **300** students to enhance understanding of ML concepts.

HONORS & AWARDS

- Hack Research Winner, University of Texas RGV, Fall 2023
- Hack Research Winner, University of Texas RGV, Fall 2022
- Invited Talk, Applications of Big Data, University of Washington Seattle, Spring 2022
- 1st Place, Best Oral Presentation, University of Texas RGV College of Science Conference, Spring 2021
- Presidential Graduate Research Assistantship Award, University of Texas RGV, 2019-2021

SKILLS

Programming Languages: Python (Pandas, NumPy, Matplotlib, Seaborn, SQL), Bash, MATLAB, Go, C++, TypeScript, HTML, CSS

Developer Tools: Jupyter Notebook, Git, Docker, Flask, VS Code

Technologies/Frameworks: PyTorch, PyTorch Geometric, TensorFlow, Langchain, SQL, CUDA, OpenAI API