Neil Ghugare

Education

The Ohio State University **08-2022 – Present**
Bachelor of Science in Physics *Columbus, Ohio*

- German and Honors Math Minor | Expected completion: 05-2026
- Notable club memberships include AI Club and the Society of Physics Studen.s

Goethe-Institut Dresden **05-2024 – 06-2024**
Kurs Teilnahmebestätigung *Dresden, Germany*

- Took part in and completed the Goethe I75 German course at the CEFR B2.2 level.
- Summer study abroad program that included cultural immersion and language practice experiences.

Experience

The Ohio State University **01-2023 – Present**
Undergraduate Research Assistant *Columbus, Ohio*

- Worked in experimental Condensed Matter Physics under Dr. ChunNing Lau and PhD Student Jiayin Wang.
- Participated in the OSU Physics Summer Research Program 2023.
- Worked on a project related to AI identification of Graphene layers through unsupervised clustering algorithms.

The Ohio State University **09-2023 – Present**
Student Assistant - Grader *Columbus, Ohio*

- Assist professors with teaching through grading homework and assignments.
- Classes graded: Math 3345 (Foundations of Higher Mathematics)

Zooniverse **04-2023 – Present**
Volunteer *Remote*

- Aided in scientific research through classification tasks, many of which involve or will help train AI projects.
- Contributed to eight projects including CERN Displaced Vertex Identification and Cool Neighbors (brown dwarf movement searching).

Certifications

Goethe Zertifikat B2 **06-2024**

- Successfully demonstrated reading, listening, speaking, and writing abilities at the CEFR B2 level for German.

Wolfram Mathematica Level 1 Certification **04-2023**

- Demonstrated proficiency in using the Wolfram Mathematica software, including use of notebooks.

Wolfram Language Level 1 Certification **04-2023**

- Demonstrated proficiency in using the Wolfram Language, including how to do use different methods of data representation, visualization, and the neural net and other frameworks.

PCEP Certified Entry-Level Python Programmer **07-2022**

- Demonstrated proficiency in entry-level python programming skills.
- Given by the OpenEDG Python Institute | Certification ID: w5Aq.PwDt.ArRc

Technical Skills

Programming Languages: Python, Java, C++, MATLAB, and Mathematica. Familiarity with C and FORTRAN.
Tools: LaTeX, Git, Gradle, Maven, Jupyter Notebooks, Conda/PyPI/Venv, and Tensorflow/Scikit-Learn
Language Skills: English (Native), German (CEFR Level B2), and understands Marathi

Select Projects

Graphene Layer Identification AI **07-2023**

- Employed unsupervised clustering algorithms like DBSCAN and GMM along with CV2 image pre-processing to automatically identify layers of Graphene on an Si/SiO_2 substrate.
- This project completed it's preliminary phase on 07-2023. The project work is still ongoing.

Hemoglobin Binding Cooperativity **04-2023**

- Use MATLAB to compare models (Non-Cooperative/Pauling/Adair) of oxygen binding to hemoglobin.