

Sayak Bal

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EXPERIENCE

- **Indian Institute of Engineering Science and Technology, Shibpur** [\[in\]](#) Nov 2024 - Present
Undergraduate Research Associate
Kolkata, India
 - Supervised by Dr. Snehanshu Pal.
 - Development of EAM Potential of Zr-Cr alloy system using QuantumEspresso (DFT and MD) and conducted literature review on past EAM Potential developments and mechanical properties of $ZrCr_2$ alloy for verification of the developed potential
 - Publication in pipeline
- **Indian Institute of Science, Bengaluru** [\[in\]](#) May 2024 - July 2024
Research Intern
Bengaluru, India
 - Supervised by Dr. Pikee Priya.
 - Designed Refractory HEAs with high strength, low weight, and cost efficiency by optimizing machine learning models for Yield Stress prediction and applying PyMOO Multi-Objective Optimization library to optimize alloy properties.
 - Compiled yield stress & elongation data from literature for model training.
 - Publication in pipeline

EDUCATION

- **Indian Institute of Engineering Science and Technology, Shibpur** Nov 2022 - Present
B. Tech in Metallurgy and Materials Engineering (6th Semester)
Kolkata, India
 - CGPA: 7.87/10.00
- **Julien Day School** April 2019 - March 2021
Indian School Certificate (ISC)
Kalyani, India
 - Grade: 92.25%

PROJECTS

- **Review Article on EAM Potential Development** Jan 2025 - Present
Literature review, DFT, MD, QuantumEspresso
 - Conducted extensive Literature Review on EAM Potential development of Binary and Ternary systems to develop a review article on EAM Potential development of Binary and Ternary systems and what can be the future direction of research for development of EAM potential of Quarternary systems
 - Publication in pipeline
- **CNN Based Image Classifier** Self-Project
Tools: Python, TensorFlow, Keras
 - Created an image classifier based on a dataset from Kaggle which classified images of dogs and cats

SKILLS

- **Programming Languages:** C, C++, JAVA, Python
- **Data Science & Machine Learning:** NumPy, Pandas, Scikit-Learn, XGBoost, Seaborn
- **Mathematical & Statistical Tools:** MATLAB, COMSOL, MS Excel
- **Research Skills:** DFT, MD, Monte-Carlo Simulations, QuantumEspresso, LAMMPS, Paper Writing, Mechanical Testing of Materials, Metallography

HONORS AND AWARDS

- **1st Prize in Metalloscape** March 2023
Metallum 4.0, Society of Student Metallurgists, IEST Shibpur
 - Presented a poster on the application of Ti-coated Biomaterials for use in hip-socket joints

ADDITIONAL INFORMATION

Languages: English (Bilingual), Bengali (Native), Hindi (Intermediate), French (Beginner)

Interests: Piano, Electric Guitar, Table Tennis