Mehul Nair

510-974-6768 mehulnair2005@gmail.com linkedin.com/in/mehnai

Education

University of California Berkeley **August 2022 - May 2026**
B.S. Materials Science and Engineering & Nuclear Engineering *Berkeley, CA*
GPA: 3.7

Relevant Coursework

Current: Thin-Film Materials Science,Engineering Thermodynamics, Mechanical Behavior of Materials
Completed: Materials Characterization; Advanced Modeling of Manufacturing Processes (Graduate-level); Statics and Mechanics of Materials; Nuclear Reactions; Bonding, Crystallography and Defects; Controlled Fusion; Modern Physics; Properties of Materials; Electricity and Magnetism;

Experience

Superconducting Magnet Program, LBNL **October 2023 – Present**
Student Researcher *Berkeley, CA*
- Created quench detection system using LabView FPGA which beat current system sensitivity by 1000 times
- Developing machine-level denoising of voltage data in order to detect quench seconds before it starts

Center for Complex and Active Materials, Pan Group **June 2024-August 2024**
Student Researcher *Irvine,CA*
- Learned how to use STEM imaging techniques to image various ferroelectric interfaces at atomic resolution
- Developed python code that refines atomic positions in charge density maps using image processing methods
- Used Image Processing to allow atomic position determination of low-res charge density maps (<100000 pixels)

Applied Nuclear Physics Division, LBNL **March 2023 – March 2024**
Research Affiliate *Berkeley, CA*
- Testing novel image reconstruction algorithms for low noise near-field imaging of radioactive sources in medical settings
- Utilized python and various statistical models including MLEM and LBFGS with various penalty functions for the purpose of image reconstruction
- Developed fitting algorithms identifying peaks of radiation spectra outputted by gamma vision to characterize differences in radiation detectors

Nuclear Materials Lab, UC Berkeley **September 2022 – September 2024**
Undergraduate Research Assistant *Berkeley, CA*
- Conducted SEM, EBSD and Tensile Testing on additive manufactured steel for microstructure characterization
- Conducted a study on radiation effects on fusion materials in conjunction with the Superconducting Magnet Program at LBNL
- Conducted mechanical properties testing on epoxies used for superconducting accelerator magnets (See publications)
- Utilized Scanning Electron Microscopy to analyze and characterize REBCO and lifted out samples for TEM

Radiation Safety Committee, UC Berkeley College of Engineering **June 2023 – Present**
Undergraduate Student Representative *Berkeley, CA*
- Advises Environment, Health & Safety (EH&S) staff in implementing campus radiation safety and radioactive waste programs

Publications and Presentations

Investigating Irradiated Superconducting Magnet Insulation Materials for Particle Accelerators
- Published in IEEE Transactions on Applied Superconductivity, vol. 33, no. 5, pp. 1-7, Aug. 2023, Art no. 7700307, doi: 10.1109/TASC.2023.3252480.

Smart Quench Management System Based on Fast Low-Level Voltage Measurements for HTS Magnets
- Presented at ASC 2024.

Morphology Based Image Processing for Improved Atomic Position Determination in STEM Imaging
- Presented at UCI SURF Research Symposium.

Effects of Composition on Radiation Damage Severity in Epoxy Mixes
- Presented at MSE 104 Research Symposium at UC Berkeley.

Technical Skills

Software: Python, Java, MATLAB, Solidworks, LabView, Digital Micrograph, Image Processing, Data Analysis
Technical: Scanning Electron Microscopy (SEM), Sample Preparation, Mechanical Property Testing, EDS, EBSD, TEM Sample Preparation (FIB), X-Ray Diffraction, STEM
Other: Organizational Skills, Teamwork, Leadership, Interpersonal Skills