Quinn Parker

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Objective

Electrical Engineering major pursuing an internship with the National Renewable Energy Laboratory in material analysis for photovoltaic cell fabrication. Such an internship will facilitate an experience to strengthen advanced laboratory research skills, broaden expertise in computational material science, and help further the DOE directive for securing renewable energy technology for national security and environmental protection.

Education

Georgia Institute of Technology | Atlanta, GA *August 2021 – Present*
Bachelor of Science in Electrical Engineering, Minor in Physics; GPA 3.50/4.00 Expected Graduation, May 2023

Skills

Communications: Presentations, research papers, research Q&A's, progress reports, symposiums, customer service
Computer: Linux (Debian), Bash, Git, Slurm scheduling, PyTorch, Keras, scikit-learn, Monte Carlo, Wang-Landau method
Programming: Proficient in Latex, Python, R, C, MATLAB, SQL, XML, and Dart/Flutter
Software: Fusion360, Arduino IDE, McSpice, GitHub, Adobe Photoshop, Audition, Illustrator, Mathematica, openRocket

Experience

Los Alamos National Laboratory | Los Alamos, NM *June 2021 – Present*
Student collaborator, Theoretical Physics and Materials division

- Evaluated literature on material classification and designed configurations of material models based on new experimental findings.
- Collaborated with colleagues on new methods to augment computational models for higher efficiency and decrease noise in the model's analysis.
- Presented work at internal Los Alamos symposium at the end of the summer.

University of North Georgia | Dahlonega, GA *January2020 – August 2020*
Teacher Assistant, Department of Physics and Astronomy

- Facilitated discussion and in-class problem solving based learning with the Professor.
- Curated special problems and unique strategies for students with learning disabilities for more effective learning.
- Collaborated with other teacher assistants on how to better discuss and present new material.

Research

Analysis of Tungsten materials for Magnetic-Confinement Fusion Summer 2021
Student collaborator
The team researched to develop systematic methods for analysis of Tungsten surface structures using computational techniques. This work is part of a greater research collaboration to investigate materials suitable for use in magnetic-confinement fusion reactors.

- Managed computation programs on Los Alamos' High Performance Computer cluster.
- Ran extensive computational experiments on Tungsten structures using grand-canonical sampling method developed at Los Alamos for a set of Tungsten with special surface features.
- Built computation models to assay thermodynamic stability of these solid structures and prepared data for analysis.

Nanotube Polymer Classification with Machine Learning Summer 2020 – Fall 2021
Co-collaborator
Studying Neural Network models to quantify nano-scale polymer absorption, identify polymer phase shifts and structural transitions. Currently awaiting referee review with Physics Review E journal.

- Co-authored paper in studying Neural Network models to quantify nano-scale wetting, identify polymer phase shifts and structural transitions.
- Implemented state of the art optimization algorithms and methods of pre-processing to experiment with efficiency of polymer classification in Python.
- Mentored fellow student in Machine learning algorithms and implementing computational schemes.

Relevant Coursework

Non-Linear Dynamics: Driven oscillators; bifurcation; fractals; Poincaré maps; dynamical partitioning.
Multimedia Signal Processing: Sampling theorem; Discrete Fourier Transform; spectral analysis; Fast Fourier transform.
Quantum Mechanics: Abstract linear algebra Heisenberg and Schrödinger pictures; exact solvable; interaction picture.
Electrodynamics: Maxwell's equations; Laplace and Poisson equations; electric-magnetic fields in matter.
Thermodynamics: Study of Boltzmann's formalism; entropy; heat transfer; partition functions; Gibbs free energy.
Probability and Statistics: Intro to probability theory; hypothesis testing using z and t procedures; Chi-Squared tests, ANOVA; Statistics software (SPSS) and R-Studio was used.