Kalie Knecht

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Education

University of California, Berkeley — **Berkeley, CA**
Doctor of Philosophy in Nuclear Engineering *GPA: 3.50* — August 2019 - Present

- Advisor: Prof. Kai Vetter
- Minors: Medical Imaging and Data Science

University of Tennessee — **Knoxville, TN**
Bachelor's of Science in Honors Nuclear Engineering *GPA: 3.96* — August 2014 - May 2019

Research Experience

Lawrence Berkeley National Laboratory — **Berkeley, CA**
Graduate Student Researcher — August 2019 - Present

- 3D Compton image reconstruction with scene data fusion using a free-moving gamma-ray detector and auxillary contextual sensor package.
- Generating 3D Compton Images from radiation data collected at Fukushima Daiichi Nuclear Power Station and Chernobyl Nuclear Power Plant.

Los Alamos National Laboratory — **Los Alamos, NM**
Space Science and Applications Intern — June 2020 - Present

- Participated in the NSSC-LANL Keepin Summer Program - an eight week extended research internship with nonproliferation related research project and a companion symposium series linking nuclear security science, technology, and policy.
- Developed software to analyze the charge collection in a two-pixel semiconductor detector to be used in a space radiation telescope.

Oak Ridge National Laboratory — **Oak Ridge, TN**
Safeguards & Security Technology Intern — May 2019 - August 2019

- Investigated current international safeguards methods for research reactors.
- Collected data from HFIR-REDC Pu-238 production process to determine characteristics of normal operation at a research reactor with collocated hot cell facilities.

Argonne National Laboratory — **Lemont, IL**
Nuclear Science & Engineering Intern — May 2018 - August 2018

- Developed code in Fortran to update SAS4A/SASSYS-1 input preprocessor to allow free format input.
- Extended unit testing capabilities of SAS4A/SASSYS-1.

University of Tennessee — **Knoxville, TN**
Nuclear Engineering Undergraduate Research Assistant — January 2017 - May 2019

- Advisor: Dr. Steven Skutnik
- Simulated transition from an open to closed nuclear fuel cycle using Cyclus.
- Interpreted data collected from Cyclus using Python.

Materials Science & Engineering Undergraduate Research Assistant — May 2015 - January 2017

- Advisor: Dr. William Weber
- Synthesized a sample for study using conventional solid-state synthesis.
- Conducted an in-situ high temperature x-ray diffraction (XRD) study and analyzed XRD patterns.
- Created and presented a poster with a summary of all work and results at The Minerals, Metals, and Materials Society national conference in 2016.

Teaching Experience

University of California, Berkeley **Berkeley, CA**
Graduate Student Instructor August 2020 - December 2020

- Undergraduate radiation detection (NE 104): semiconductor and scintillator detector operation, manufacturing, signal generation, readout techniques, applications and limitations.
- Recording laboratory experiments and editing videos to ensure safe & equitable learning during the COVID-19 pandemic.

University of Tennessee **Knoxville, TN**
Undergraduate Teaching Assistant August 2018 - May 2019

- Developed weekly review sessions for Thermal Science and Reactor Theory courses.
- Provided tutoring services for students enrolled in Thermal Science and Reactor Theory.

Skills

Programming Languages:	Python and Fortran
Code Proficiencies:	MCNP, GOTHIC, and Cyclus
Databases:	HDF5
Version Control:	git and SVN
Operating Systems:	Windows, macOS, and Linux
Laboratory Skills:	X-ray Diffraction, Radiation Measurements, and Gamma Ray Spectrum Analysis

Leadership

UCB Radwatch
Graduate Student August 2019 - Present

- Engaging with the community regarding the risks and hazards of radiation in our environment.
- Managing Twitter account (@UCBRadWatch).
- Transitioning website to Wordpress and ensuring website information is current and accurate.

Fission Products Mentoring Program
Executive Committee January 2020-Present

- Founded a mentoring program for Nuclear Engineering undergraduate students.
- Developed goals and a tracking metric for the first iteration of the program.

Society of Women Engineers
GradSWE Mentoring Team October 2019 - June 2021

- Promoting mentoring program to graduate students during registration period.
- Coordinated webinars for graduate students to build skills during COVID-19 crisis.
- Redesigned matching process, reducing wait time for matching from 4 months to 1 month.

UCB GradSWE Co-President August 2021 - Present

- Organizing a team of 23 officers to manage the UCB GradSWE Section.
- Coordinating with other graduate engineering student societies to plan a welcome back event

UCB GradSWE Webmaster and New Student Recruitment Chair August 2020 - August 2021

- Revitalized GWE website to be a useful tool for members by adding resources pages and up to date information on upcoming events.
- Created a 'buddies' program, where first year grad students are paired with GWE members.

President of UTK SWE May 2018 - May 2019

- Raised $11,450 for section through company sponsorships and award applications.
- Managed team of 7 officers and 10 chairs overseeing a 260 member section.
- During presidency, UTK SWE was awarded with:
  - SWE Mission Award Gold and SWE Best Practice in Mentoring Awards at WE18.
  - Program of the Year Award for SWEeties and Community Outreach Award for TET at Engineering Diversity Programs' Council of Partners Banquet.
  - Division of Student Life Best Large Organization.
- Created Alumni Chair position to improve relations with UTK SWE Alumni.

Honors and Awards

UC Berkeley Department of Nuclear Engineering

Virgil Shrock Award for Outstanding Service	May 2021
Virgil Shrock Award for Outstanding Mentorship	May 2020

Department of Energy Integrated University Program

Graduate Fellowship at University of Wisconsin. Declined offer.	May 2019
Undergraduate Scholarship	May 2017
Undergraduate Scholarship	May 2016

University of Tennessee Department of Nuclear Engineering

Outstanding Senior Design Team Award	May 2019
Top Senior Academic Award	May 2019
Top Junior Academic Award	May 2018
Outstanding Ambassador Award	May 2018
Top Sophomore Academic Award	May 2017
Nuclear Regulatory Commission Scholarship	Feb 2015

Publications, Proceedings, & Papers

1. J. Hecla and **K. Knecht** et. al., "Polaris-LAMP: Multi-modal 3D Image Reconstruction with a Commercial Gamma-ray Imager" IEEE Trans. Nucl. Sci.. Early Access.

2. **K. Knecht** et. al., "Evaluating 3D Gamma-ray Imaging Techniques for Distributed Sources at the Fukushima Daiichi Nuclear Power Station," in Proc. NSS/MIC, 2020, pp. 1-5.