Mark Kamuda

Home Address
461 Springside Lane
Buffalo Grove, IL 60089

Contact
e-mail: kamuda1@illinois.edu
work: (847) 917-0302

Citizenship U.S.A.

Education

M.S. in Nuclear, Plasma, and Radiological Engineering, University of Illinois at Urbana-Champaign **2017**

- "Automated Isotope Identification Algorithm Using Artificial Neural Networks."
- Advisor: Professor Clair J. Sullivan

B.S. in Nuclear, Plasma, and Radiological Engineering, University of Illinois at Urbana-Champaign **2014**

Experience

PhD Research Fellow, UIUC, Urbana, IL **May 2017 - May 2019 (expected)**

- Applied machine learning methods to automated isotope identification
- Advisor: Professor Kathryn D. Huff

The Hacker Within-Illinois, President UIUC, Urbana, IL **Aug 2018 - Current**

Guest Scientist, Los Alamos National Laboratory, Los Alamos, NM **Summer 2015**

- Analyzed legacy spectroscopic data to increase the accuracy of the measured gamma-ray branching ratios for ^{147}Nd
- Performed gamma-ray spectroscopy measurements at the Nevada National Security Site

Teaching Assistant, UIUC, Urbana, IL **Spring 2013, Spring 2014**

- Nuclear Weapons and Arms Control (PHYS 280)

Undergraduate Research Assistant, UIUC, Urbana, IL **2013-2014**

- Undergraduate Research Assistant to Dr. Clair J. Sullivan: Set up and calibrated radiation detectors for research experiments
- Measured the detector response and efficiency of a NaI detector

Engineering Outreach Society, President UIUC, Urbana, IL **Aug 2013 - May 2014**

Guest Scientist, Brookhaven National Laboratory, Brookhaven, NY **Summer 2013**

- Simulated a novel collimator design in Geant4
- Analyzed the performance of the novel collimator for a specific imaging application
- Presented our work in a poster and published article

Publications

M. Kamuda and C.J. Sullivan . An Automated Isotope Identification and Quantification Algorithm for Isotope Mixtures in Low-Resolution Gamma-ray Spectra. *Radiation Physics and Chemistry.* **2019**

M. Kamuda, J. Zhao, K. Huff. A Comparison of Machine Learning Methods for Automated Gamma-Ray Spectroscopy. *Nuclear Instruments and Methods in Physics Research Section A.* **2018**

M. Kamuda. "Automated Isotope Identification Algorithm Using Artificial Neural Networks". *MS Thesis.* University of Illinois at Urbana-Champaign. **2017**

M. Kamuda, J. Stinnett, and C.J. Sullivan . Automated Isotope Identification Algorithm Using Artificial Neural Networks. *IEEE Transactions on Nuclear Science.* **2017**

J. Mattingly, J. Hutchinson, C. Sullivan, J. Stinnett , M. Kamuda, M. Alamaniotis, B. Simms, J. Mueller, J. Newby, J. Linkous, S. Pozzi, K. Polack, M. Hamel, Z. He, D. Goodman, and M. Streicher. "CNEC and CVT Subcritical Experiments with Category I

Special Nuclear Material at the Nevada National Security Site Device Assembly Facility." *Institute of Nuclear Materials Management Conference Record.* **2016**

Mark Kamuda, Yonggang Cui, Terry Lall, Jim Ionson, Giuseppe S. Camarda, Anwar Hossainm, Ge Yang, Utpal N. Roy, and Ralph B. James. Modeling Of A Slanted-hole Collimator In A Compact Endo-cavity Gamma Camera. *SPIE Proceedings.* **2013**

Conference Presentations

M. Kamuda. ''Uranium Enrichment Measurements Using an Artificial Neural Network." *CVT Workshop.* Ann Arbor, MI. **2017**

M. Kamuda and C.J. Sullivan. ''Automated Isotope Identification Algorithm Using Artificial Neural Networks." *UPR.* Walnut Creek, CA. **2017**

M. Kamuda and C.J. Sullivan. ''An Automated Isotope Identification and Quantification Algorithm for Isotope Mixtures in Low-Resolution Gamma-ray Spectra." *IRRMA-X.* Chicago, IL. **2017**

M. Kamuda, J. Stinnett, C.J. Sullivan. ''Peak Quantification with Neural Networks for Low-Resolution NaI Spectra." *IEEE Nuclear NSS/MIC.* Strasbourg, France. **2016**

M. Kamuda and C.J. Sullivan. ''An Automated Isotope Identification and Quantification Algorithm for Isotope Mixtures in Low-Resolution Gamma-ray Spectra." *SORMA.* Berkeley, CA. **2016**

M. Kamuda, M.M. Watson, and C.J. Sullivan. ''Information Barriers based on Enhanced Automated Isotope Identification." *UITI.* Ann Arbor, MI. **2015**

Guided Discussions

M. Kamuda and J. Wilson. ''Data Mining and Machine Learning." *The Hacker Within.* Champaign-Urbana, IL. **February, 2018**

M. Kamuda. ''Natural Language Processing." *The Hacker Within.* Champaign-Urbana, IL. **November, 2017**

M. Kamuda. ''Introduction to TensorFlow." *The Hacker Within.* Champaign-Urbana, IL. **September, 2017**

Programming

Python (Numpy, Pandas, Matplotlib, Scikit-learn, Jupyter Notebooks, Tensorflow), LaTeX, JavaScript, MATLAB, Mathematica, MCNP6, Geant4