

MARK KAMUDA

phone: 847-917-0302 ◊ email: kamuda1@illinois.edu ◊ web: <http://kamuda1.github.io>

SUMMARY

Machine learning engineer with 4 years of experience applying deep learning algorithms to 1D signal classification and regression in a range of real-world problems.

SKILLS

- Python, TensorFlow, Keras, Amazon Web Service, Git/GitHub, Linux, MATLAB

RESEARCH EXPERIENCE

Artificial Neural Network for Spectral Analysis ([link](#))

- Developed an open source Python package for deep learning with spectroscopic data
- Researched and evaluated dense, convolution, and autoencoder neural networks for problems in nuclear security
- Applied software development best practices such as unit testing, version control, and automated documentation
- Designed and simulated custom training and testing datasets

A Comparison of Machine Learning Methods for Automated Gamma-Ray Spectroscopy

- Compared convolution and dense neural networks for multiclass signal classification
- Studied both algorithms' robustness to simulated data outside the training dataset
- Published results in Nuclear Instruments and Methods in Physics Research Section A

Automated Isotope Identification Algorithm Using Artificial Neural Networks

- Employed a logarithmic regression neural network for multiclass multilabel signal regression
- Published results in IEEE Transactions on Nuclear Science

LEADERSHIP

The Hacker Within-Illinois, President

Aug 2018 - Current

- Effectively managed a software skill-sharing club of over 25 members
- Organized and facilitated bi-monthly technical presentations given by members
- Sustained membership by encouraging participation and planning creative topics
- Developed and delivered multiple technical presentations and tutorials

Engineering Outreach Society, President

Aug 2013 - May 2014

- Headed an outreach organization of over 50 students with an executive board of five people
- Coordinated weekly science projects with a team of ten elementary school teachers

EDUCATION

University of Illinois at Urbana-Champaign, Illinois

Doctorate, Nuclear Engineering

Aug 2017 - May 2019 (expected)

Masters, Nuclear Engineering

May 2014 - August 2017

Bachelors, Nuclear Engineering

August 2010 - May 2014

Related Courses

Pattern Recognition

Detection and Estimation Theory

Scientific Visualization

Random Processes

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