MARK KAMUDA

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SUMMARY

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

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**

SKILLS

Programming: Python, TensorFlow, Keras, Git/GitHub, MATLAB, Amazon Web Service

RESEARCH EXPERIENCE

Artificial Neural Network for Spectral Analysis (link) — **Since Aug 2017**

- Developed a Python package applying deep learning algorithms to custom datasets
- Synthesized domain specific datasets for regression and classification tasks
- Automated hyperparameter searches for dense, convolution, and autoencoder neural networks
- Managed and organized project using GitHub
- Trained models using Amazon Web Services

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 real-world data perturbations
- Published results in Nuclear Instruments and Methods in Physics Research Section A

Automated Isotope Identification Algorithm Using Artificial Neural Networks

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

Related Courses

Pattern Recognition | Detection and Estimation Theory | Scientific Visualization | Random Processes

LEADERSHIP

The Hacker Within-Illinois, President — **Aug 2018 - Current**

- Effectively managed a software skill-sharing club of over 25 members
- Organized, planned, and facilitated bi-monthly member presentations on technical 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
- Coordinated weekly projects with an executive board of five people and a team of ten elementary school teachers

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**