Adam Drescher

Postdoctoral Researcher

30 January 1994

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About Me

My research interests leverage machine learning techniques to disrupt conventional problem domains. Currently I apply machine learning to improve autonomous uranium assay monitoring of spent nuclear fuel. I have experience developing and applying data science analytic solutions in collaboration with teams in varied business environments.

Education

PhD, Engineering
University of Texas at Austin
Dec 2019 | GPA: 3.9 / 4.0

MS, Engineering
University of Texas at Austin
May 2017 | GPA: 3.9 / 4.0

BS, Physics
University of Texas at Austin
Dec 2015 | GPA: 3.7 / 4.0

Skills

Languages: Python, Matlab, Basic SQL
ML Models: Ridge, Lasso, Elastic Net, Decision Trees, Random Forests, SVM, Neural Nets, Ensemble Methods, Classification, Regression, Clustering, Supervised, Unsupervised, PCA
ML Packages: Scikit-Learn, Basic Tensorflow
Other: MS Office, Git

Work Experience and Internships

2017-2019 — PhD Graduate Student — University of Texas at Austin
Developed autonomous, novel, ensemble-based machine learning monitoring systems for uranium assay of spent nuclear fuel with errors as low as 0.05%.

2016-2017 — Master's Graduate Student — University of Texas at Austin
Built and characterized the performance of a novel gamma radiation detection system for fission product measurements with 10 times improvement on count-rate compared to state-of-the-art.

2016-2019 — Teaching Assistant — University of Texas at Austin
Served as TA for five undergraduate and graduate courses. Presented up to 50% of all lectures, guided students through laboratory experiments, graded assignments and exams, and provided prompt feedback to student questions.

2017 — Summer Research Intern — Oak Ridge Institute for Science and Education, TN
Performed statistical analysis on Relevance Vector Machine models for inferring nuclear reactor core burnup based on isotopic measurements and with unknown sampling position.

2016 — Summer Research Intern — Oak Ridge Institute for Science and Education, TN
Performed Least Squares Regression on gamma-ray measurements to quantify uranium and plutonium contents of irradiated materials.

Research and Projects

Feb 19 — Gamma-Gamma Coincidence with Neutron Activation Analysis in Phosphate Rock — Munich, Germany
Improved measurement capabilities of rare-earth elements. 27th Seminar on Activation Analysis and Gamma Spectrometry

Jul 18 — Revamping of a Graduate Radiochemistry Course for Nuclear Forensics Applications — London, UK
Collaborated with engineering professors to modernize a nuclear radiochemistry course while broadening the target audience to include graduate students from Chemistry, Physics, and other Engineering disciplines. 2018 International Conference on Nuclear Engineering.

Sep 17 — Modeling a U.S. Equilibrium Closed Fuel Cycle with Waste Product Comparisons — Seoul, Korea
Participated in a team to develop an extensive model of a nation-wide transition to fuel-recycled nuclear reactors to fight climate change and reduce carbon emissions below the RCP 2.6 standard. Global 2017 International Nuclear Fuel Cycle Conference.

Publications

July 18 — Journal Article
A. Drescher et al., "Gamma-gamma coincidence in neutron activation analysis", *Journal of Radioanalytical and Nuclear Chemistry*, Volume 318, October 2018, Pages 527-532, ISSN 1588-2780.

October 17 — Conference Proceeding
A. Drescher et al., "Developing Support Vector Machine Prediction Capabilities of Uranium Enrichment Based on Gamma-Gamma Coincidence Signatures", IEEE Nuclear Science Symposium and Medical Imaging Conference.

May 17 — Master's Thesis
Characterization of $LaBr_3$:Ce Detectors in a Gamma-Gamma Coincidence Configuration

Apr 17 — Journal Article
A. Drescher et al., "Gamma-gamma coincidence performance of LaBr3:Ce scintillation detectors vs HPGe detectors in high count-rate scenarios", *Applied Radiation and Isotopes*, Volume 122, April 2017, Pages 116-120, ISSN 0969-8043.