

# Adam Drescher

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EDUCATION	<b>University of Texas at Austin</b> , Austin, Texas, USA	
	Doctor of Philosophy (PhD) in Nuclear Engineering	Aug 2017 – Dec 2019
	• Cumulative GPA: 3.93/4.0	
	Master of Science (MS) in Nuclear Engineering	Jan 2016 – May 2017
	• Cumulative GPA: 3.9/4.0	
	Bachelor of Science (BS) in Radiation Physics	Jan 2013 – Dec 2015
	• Cumulative GPA: 3.7 / 4.0	
PUBLICATIONS	<b>Doctoral Dissertation</b>	Dec 2019
	Leveraging Machine Learning Capabilities for the Characterization of Irradiated Uranium: A Case Study of Prediction Methods for Nuclear Safeguards and Nuclear Forensics	
	<b>Master's Thesis</b>	May 2017
	Characterization of LaBr <sub>3</sub> :Ce Detectors in a Gamma-Gamma Coincidence Configuration	
	<b>Journals</b>	
	1)	Jul 2018
	A. Drescher et al., Gamma-gamma coincidence in neutron activation analysis, <i>Journal of Radioanalytical and Nuclear Chemistry</i> , Volume 318, October 2018, Pages 527-532, ISSN 1588-2780. <a href="https://doi.org/10.1007/s10967-018-6033-8">https://doi.org/10.1007/s10967-018-6033-8</a>	
	2)	Apr 2017
	A. Drescher et al., Gamma-gamma coincidence performance of LaBr <sub>3</sub> :Ce scintillation detectors vs HPGe detectors in high count-rate scenarios, <i>Applied Radiation and Isotopes</i> , Volume 122, April 2017, Pages 116-120, ISSN 0969-8043. <a href="https://doi.org/10.1016/j.apradiso.2017.01.012">https://doi.org/10.1016/j.apradiso.2017.01.012</a> .	
RESEARCH EXPERIENCE	<b>Postdoctoral Research Associate in Nuclear Forensics, Security Modeling</b>	Since Jan 2020
	Nuclear Security Modeling Group, Nuclear Nonproliferation Division, National Security Sciences Directorate, Oak Ridge National Laboratory	
	• Contributed predictive modeling capabilities to the Data Analytics for Safeguards campaign.	
	• Interfaced with project stakeholders and presented work at review meetings.	
	<b>PhD Dissertation</b>	Aug 2017 – Dec 2019
	Leveraging Machine Learning for Predictions on Uranium Fission Product Data	
	• Built statistical prediction models for inferring irradiated uranium enrichment across multi-variable ranges of unknown parameters based on gamma-ray spectrometry measurements.	
	<b>Master's Thesis</b>	Jan 2016 – May 2017
	Characterization of LaBr <sub>3</sub> :Ce Detectors in a Gamma-Gamma Coincidence Configuration	
	• Utilized the XIA Pixie-4 module to collect fission product gamma-gamma coincidence data.	
	• Characterized the performance of a coincidence lanthanum bromide detection system with comparisons to a coincidence high-purity germanium detection system.	
	• Performed coincidence measurements of irradiated uranium samples with the XIA Pixie-4 module.	
	<b>Summer Research Intern</b>	Summer 2017
	Nuclear Engineering Science Laboratory Synthesis, Oak Ridge National Laboratory	
	• Performed statistical analysis on Relevance Vector Machine models for inferring reactor core burnup based on isotopic vector of arbitrary core samples with position independence.	
	<b>Summer Research Intern</b>	Summer 2016
	Nuclear Engineering Science Laboratory Synthesis, Oak Ridge National Laboratory	
	• Performed Least Squares Regression on gamma-ray measurements to quantify uranium and plutonium contents of irradiated materials.	
	• Measured fission products in order to quantify mixed uranium and plutonium samples.	
	<b>Undergraduate Research Assistant</b>	Aug 2014 – Dec 2015
	Nuclear Engineering Teaching Laboratory, University of Texas at Austin	
	• Developed a lanthanum bromide gamma coincidence radiation detection system.	
	• Developed practical solutions for experimental setups utilizing 3D printing.	
	• Performed periodic reactor operations, maintenance, and surveillance in accordance with NRC regulations.	

<b>TEACHING EXPERIENCE</b>	<b>Teaching Assistant, Concepts in Nuclear and Radiation Engineering</b>	Jun 2018
	Introductory undergraduate study abroad course in Ferrara, Italy	
	<ul style="list-style-type: none"> <li>• Prepared and presented course lectures in collaboration with the professor.</li> <li>• Provided the students with logistical guidance and assistance throughout study abroad.</li> </ul>	
	<b>Teaching Assistant, Radiation Protection Laboratory</b>	May 2018
	Mixed undergraduate and graduate level course in the Mechanical Engineering Department at UT Austin	
	<ul style="list-style-type: none"> <li>• Guided students through daily laboratory experiments and graded laboratory reports.</li> </ul>	
	<b>Teaching Assistant, Gamma-Ray Spectrometry</b>	Spring 2017
	Graduate level course in the Mechanical Engineering Department at UT Austin	
	<ul style="list-style-type: none"> <li>• Guided students through biweekly laboratory experiments and provided instructions for laboratory report writing.</li> </ul>	
	<b>Teaching Assistant, Health Physics &amp; Nuclear Environmental Protection</b>	Fall 2016
	Undergraduate level course in the Mechanical Engineering Department at UT Austin	
	<ul style="list-style-type: none"> <li>• Presented many lectures throughout the semester to fill in for professor absences.</li> <li>• Graded homework assignments, exams, and laboratory reports and provided feedback accordingly.</li> </ul>	
	<b>Research Mentor</b>	Fall 2016
	<ul style="list-style-type: none"> <li>• Guided an undergraduate research assistant for 10 hours per week through experiments which provided valuable data for my Master's Thesis.</li> </ul>	
<b>PRESENTATIONS &amp; CONFERENCE PROCEEDINGS</b>	<b>Institute of Nuclear Materials Management Annual Meeting - Baltimore, MD</b>	Jul 2020
	Leveraging Machine Learning Capabilities for the Characterization of Irradiated Uranium: A Case Study of Analysis Methods for Nuclear Safeguards and Nuclear Forensics	
	<ul style="list-style-type: none"> <li>• Abstract submitted pending acceptance.</li> <li>• Will result in an oral presentation and peer-reviewed publication in the Journal of Nuclear Materials Management.</li> </ul>	
	Machine Learning Approaches on Nuclear Material Accounting Data from Irradiation and Reprocessing	
	<ul style="list-style-type: none"> <li>• Abstract submitted pending acceptance.</li> <li>• Will result in an oral presentation and peer-reviewed publication in the Journal of Nuclear Materials Management.</li> </ul>	
	<b>European Research Reactor Conference - Helsinki, Finland</b>	Mar 2020
	The Complete Neutron Activation Analysis Laboratory: Thermal, Epithermal, Cyclic, Compton Suppression, Gamma-Gamma Coincidence and Prompt Gamma Facilities and Specific Radioprotection Guidelines	
	<ul style="list-style-type: none"> <li>• Co-author on the paper submitted to this conference.</li> </ul>	
	<b>Research Seminar, Oak Ridge National Laboratory - Oak Ridge, TN</b>	Aug 2019
	Leveraging Machine Learning Capabilities for the Characterization of Irradiated Uranium: A Case Study of Prediction Methods for Nuclear Safeguards and Nuclear Forensics	
	<ul style="list-style-type: none"> <li>• Oral presentation of the current status of my ongoing dissertation project.</li> <li>• Presented as a part of a successful interview for a Postdoctoral Research Associate position.</li> </ul>	
	<b>University Program Review - Raleigh, NC</b>	Jun 2019
	Leveraging Machine Learning Capabilities for the Characterization of Irradiated Uranium: A Case Study of Prediction Methods for Nuclear Safeguards and Nuclear Forensics	
	<ul style="list-style-type: none"> <li>• Oral presentation of the current status of my dissertation project at the time.</li> <li>• UPR is an annual meeting of the fellows of three consortia: CNEC, CVT, and NSSC to provide updates on their projects.</li> </ul>	
	<b>26<sup>th</sup> International Conference on Nuclear Engineering - London, UK</b>	Jul 2018
	Revamping of a Graduate Radiochemistry Course for Nuclear Forensics Applications	
	<ul style="list-style-type: none"> <li>• Oral presentation, poster presentation, and conference proceedings paper publication.</li> </ul>	
	<b>Methods and Applications of Radioanalytical Chemistry - Kona, HI</b>	Apr 2018
	Neutron Activation Analysis and Gamma-Gamma Coincidence	
	<ul style="list-style-type: none"> <li>• Poster presentation and journal publication.</li> </ul>	
	<b>IEEE Nuclear Science Symposium &amp; Medical Imaging Conference - Atlanta, GA</b>	Oct 2017
	Developing Support Vector Machine Prediction Capabilities of Uranium Enrichment Based on Gamma-Gamma Coincidence Signatures	
	<ul style="list-style-type: none"> <li>• Poster presentation and extended abstract conference proceedings.</li> </ul>	

<b>ACADEMIC HONORS &amp; AWARDS</b>	<b>Global International Nuclear Fuel Cycle Conference - Seoul, Korea</b>	Sep 2017
	Modeling a U.S. Equilibrium Closed Fuel Cycle with Waste Product Comparisons	
	• Oral presentation and extended abstract conference proceedings.	
	<b>NESLS Poster Session - Oak Ridge, TN</b>	Aug 2017
	Characterization of Machine Learning Performance for Plutonium Production Predictions	
	• Poster presentation and abstract proceedings.	
	<b>University Program Review - San Francisco, CA</b>	Jun 2017
	Characterization of LaBr <sub>3</sub> :Ce Detectors in a Gamma-Gamma Coincidence Configuration	
	• Poster presentation and summary proceedings.	
	<b>NESLS Poster Session - Oak Ridge, TN</b>	Aug 2016
<b>CAMPUS ACTIVITIES</b>	Measurements of Short-Lived Fission Products from <sup>233</sup> U, <sup>235</sup> U, and <sup>239</sup> Pu for the Rapid Characterization of Mixed Actinide Samples	
	• Poster presentation and abstract proceedings.	
	<b>Graduate Dean's Prestigious Fellowship Supplement</b>	Jul 2017
	The University of Texas at Austin	
	• A one-time supplemental monetary award for being awarded the competitive external CNEC fellowship.	
	<b>Graduate Fellow, Consortium for Nonproliferation Enabling Capabilities</b>	Sep 2016
	Consortium for Nonproliferation Enabling Capabilities	
	• Competitive fellowship for graduate students conducting research in fields relevant to nuclear nonproliferation.	
	• Provides annual stipend and coverage for all tuition and fees for four years, valued at up to \$250,000.	
	<b>Thrust 2000 - John M. Stemmons Graduate Endowed Fellowship in Engineering</b>	Jan 2016
<b>SKILLS</b>	Cockrell School of Engineering	
	• Competitive graduate fellowship offered to incoming graduate students at UT Austin in recognition of outstanding academic achievement.	
	• Provides annual supplemental compensation for four years while progressing towards a PhD with a GPA of 3.50, valued at \$36,000.	
	<b>University Honors</b>	2013 – 2015
	University of Texas at Austin	
	• Recognition for earning at least 45 grade points and attaining a semester GPA of at least 3.50.	
	<b>Longhorn Powerlifting Team, University of Texas at Austin</b>	Aug 2014 – May 2015
	• Competitive weightlifting team that earned the USAPL men's collegiate national title in 2015.	
	• Data science,	
	• Machine learning applied to nuclear security and forensics,	
<b>INTERESTS</b>	• Nuclear instrumentation,	
	• Data collection, processing, and analysis,	
	• Technical writing,	
	• Public speaking,	
	• Programming languages: Python, MATLAB, bash, git	
	• Document preparation: Microsoft Office, L <sup>A</sup> T <sub>E</sub> X, Markdown.	
	• Weightlifting,	
	• Saxophone,	
	• Motorcycling,	
	• Hiking with my dog.	

[Compiled on 2020-02-22 for website update]