


Day 1: Tuesday February 23, 2021

Track 1 		
1200	Welcome	Marc Wonders NGFP/PNNL
1205	Next Generation AI for Nuclear Proliferation Detection	Angie Sheffield NNSA
1230	Introduction to Domain Aware Methods	Ashley Shields INL
1250	A Perspective from the Analytic Intelligence Community	Emma Hague DOE-IN
1320	Break	

Next-Gen AI for Proliferation Detection:

DOMAIN-AWARE METHODS WORKSHOP

FEB
23-24



Complex & Noisy Environments



Early Proliferation Detection & Signature Discovery



Sparse Data & Rare Events



Robust Deployment & Decision Support

Track 1:  Track 2:  Link to Session: 



Complex and Noisy Environments

Session Chair: **Boian Alexandrov** | LANL
Note Taker: **Jesse Ward** | PNNL

Track 1: Continuing
(Same as Plenary Session)



1330	Imposing Harmonic Structure in Neural Networks	Mark Adams ORNL
1350	Domain Adversarial Networks and Explainability Assessment	Tom Grimes PNNL
1410	Dissolution Event Classification Using Isotope Decay Chains and Half-Life Estimates	Nageswara Rao ORNL
1430	Break	



Early Proliferation Detection and Signature Discovery

Session Chair: **Zoe Gastelum** | SNL
Note Taker: **Jen Mendez** | PNNL

Track 2




1330	Open-Source Data Analytics Value Quantification to Inform and Explain Radiological Source Detection Localization and Tracking	Sannisth Soni Svitlana Volkova Elynn Ayton PNNL
1350	Applying Domain-Aware Artificial Intelligence on the CBRN Battlefield	Adam Seybert US Army Nuclear and CWMD Agency
1410	Extracting Dynamic Proliferation Expertise and Capability Representations from Heterogenous Multilingual Open-Source Data Streams	Maria Glenski Svitlana Volkova Emily Saldanha PNNL
1430	Break	

1440	Inferring the Dynamic Location of an Environmentally-Constrained Radiative Source with a Network of Detectors	Dave Osthus LANL
1500	An Artificial Neural Network System for Special Nuclear Material Detection in Photon Based Active Interrogation Scenarios	Abbas Jinia University of Michigan
1520	Spectral Signatures for Shielded Sources	Jason Hite ORNL
1540	Closing Day 1 (in session)	Boian Alexandrov LANL

1440	Plutonium Attribution Methodology Development Using Machine Learning Techniques	Patrick O'Neal Texas A&M University
1500	Toward Early Intent Detection of Search Queries with Transformers and Experts in the Loop	Adithya V Ganesan Stony Brook University
1520	Proliferation Monitoring with Hidden Markov Models	Andrew Hollis NC State University
1540	Closing Day 1 (in session)	Zoe Gastelum SNL

Day 2: Tuesday February 24, 2021

Track 1 		
1200	Welcome	Marc Wonders NGFP/PNNL
1205	Challenges and Opportunities for AI in Nuclear Proliferation Detection	Angie Sheffield NNSA
1215	Domain Aware AI: There and Back Again	Kary Myers LANL
1300	Break	



Sparse Data and Rare Events

Session Chair: **Becky Olinger** | DTRA

Note Taker: **Tom Grimes** | PNNL

Track 1: Continuing

(Same as Day 2 Plenary Session)



1310	Constraining Data Driven Models for Detection of Sparse Temporally Correlated Events	Garrison Flynn LANL
1330	Domain-Informed Assessment of Nuclear Reactor Operations	Tom Reichardt SNL
1350	Persistent DyNAMICS: Remote Sensing Based on Domain-Informed Analytics	Thomas Kulp SNL Sidharth Manay LLNL
1410	Break	
1420	Node and Region Importance for Classifying Nuclear Operations using Multisensor Arrays	Jake Tibbetts UC Berkeley
1440	One-shot Target Detection via Physics-Informed Training	Natalie Klein LANL
1500	Closing Track 1 (followed by break)	Becky Olinger DTRA



Robust Deployment and Decision Support

Session Chair: **Stefan Hau-Riege** | LLNL

Note Taker: **Maria Glenski** | PNNL

Track 2



1310	Annotation Transfer for Prediction of Industrial Operations	Erik Skau LANL
1330	Automated Synthesis of Soft Labels using Neural Stochastic Differential Equations and Attribution Based Confidence	Sumit Kumar Jha University of Texas at San Antonio
1350	Robustness in the Wild using Domain-Aware Surrogate Functions	Jay Thiagarajan LLNL
1410	Break	
1420	A Computational Framework for Deterrence Assessment Analyses	Michelle Quirk NA-114
1440	On-the-Fly Robustness in the Wild via Data-Driven Generative Priors	Rushil Anirudh LLNL
1500	Closing Track 2 (followed by break)	Stefan Hau-Riege LLNL

1510	Panel: Requirements and Opportunities for Domain Aware Methods in Proliferation Detection			
Track 1: Continuing (Same as Day 2 Plenary Session)				
Moderator: Tammie Borders NNSA/INL				
<p style="text-align: center;">Panelists:</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Emma Hague DOE-IN Kary Myers LANL </td> <td style="width: 50%; vertical-align: top;"> Angie Sheffield NNSA Becky Olinger DTRA </td> </tr> </table>			Emma Hague DOE-IN Kary Myers LANL	Angie Sheffield NNSA Becky Olinger DTRA
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1550	Final Thoughts	Angie Sheffield NNSA		