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Final AATR Review Summary and Next Steps

Harry E. Martz, Jr.,[1] David A. Castanon,[2] Carl Crawford[3]

[1] Lawrence Livermore National Laboratory

[2] Boston University

[3] cusuptwo

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Summary and Next Steps

- Not on TSA Administrators road map, should it be?
- Consensus
  - Takes years to get a new detection capability into the field; but it does not have to take this long
  - False alarms will likely increase
  - For this to work somethings need to change, could be performed in parallel to the current CERT process
- Technical observations:
  - Able to adapt to a changing requirements
  - Able to detect (acceptable to very good PD/PFA) a new threat without having training data
  - Researchers segment, extract features and classify (Random Forests, SVM, k-nearest neighbor)
  - Better segmentation tended to produce better classification (particularly when thickness, mass restrictions were imposed)
  - Synthesized, simulated unknown OOI PDFs
  - Some retrain based on a new specification
  - Some corrected for surrounding metal information, e.g., metal artifact reduction, to improve performance
  - If TSA needs to adapt they should be able to do so (policy versus technical limitation)
- Challenges
  - What do you know at the time about the OOI; information could also change overtime
  - Creating requirements specification; virtual machine for ATR evaluation
  - How do you train a classifier without data
  - How do you test prospectively, before deployment, that you can detect the new threat adaptability and evaluation metrics
  - How to control or handle or change PFA while algorithms are optimized during current CRT/CERT process
  - Single-energy data set, metal artifacts, segmentation
- Next steps: TSA determine how to operationalize and deploy AATR capability; Show that this could have worked on a past real threat; Enhance TRL → show this can be deployed without any operational impact, show adaptive capability off–line then gradually on line (Innovation lanes, TSA R&D in Las Vegas, other airports (BOS),…); have all the researchers vote