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# Human versus Machine

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Big Data, Machine Learning (ML), and Artificial Intelligence are more and more parts of our daily lives with applications such as self-driving cars, multimedia streaming and shopping suggestions, identification of financial crimes, and medical diagnosis.

For CTBT, early adoption of ML methods took place in the 1990s with applications ranging from the monitoring of the network, to data processing and analysis, to the way OSI inspections can be conducted. The methods currently in place could probably be boosted by incorporating improved algorithms, for instance with the use of full waveform-based approaches, and by making full use of the twenty years of accumulated data. Progress has been made recently with a Bayesian approach for network processing.

Even though overall results of applying ML methods are often impressive, domain experts may formulate objections to their use. Reasons may be:

• Skepticism that an ML algorithm would find a solution if the learning data set does not contain an exact example of the result. Are Bayesian methods a way to dispel these criticisms?

• Interpretation of the results. How can a particular result be explained to an expert or a client when many ML methods have imbedded decision-making processes which remain opaque to the user?

## Promotional text

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