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Use of Neural Networks as a Range Safety Decision Support System

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ABSTRACT

Current range safety processing and display systems are generally limited to presenting the Range Safety Officer with a display of flight vehicle position, impact, and performance data in conjunction with off-nominal performance destruct criteria. The decision to take any flight termination action, based on the presented data, is primarily left to the Range Safety Officer. While still maintaining the man-in-the-loop concept, neural network based artificial intelligence systems could be employed as Decision Support Systems (DSS) to assist the decision making process of the Range Safety Officer. The adaptive nature of a neural network allows it to “learn” from the data it is presented with and, over time, become an increasingly intelligent DSS. This paper describes ENSCO, Incorporated’s investigation of where and how neural networks could be employed as real-time DSS tools in the range safety decision making process. This paper will detail an ENSCO, Inc. investigation of how a neural network approach can be a viable asset to the range safety decision making process. The use of neural networks as tools to increase public safety is a feasible methodology that should be further investigated as a potential way ahead for future range safety technology programs at spaceports and launch ranges.

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