# SAMPLE ABSTRACTS

## Identifying Aircraft Type and Class

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Track association is the process of from a data set of individual spatial temporal data points belonging to many unidentified objects, identifying points belonging to the same object and creating tracks such that all object trajectories represented in the data set are identified. An automated system relying only upon spatial temporal data in order to perform track association is beneficial, as objects one seeks to track would not need additional equipment to report their identity. We employed maritime vessel radar data from a harbor to demonstrate our method. Our method employs multiple iterations, each having a model or heuristic and a target association case, to build upon previous iterations' sub track associations. Scoring track association also involves interesting metrics; completeness, continuity and number of associated tracks. Using these metrics our proposed solution performs very well, even under additionally challenging conditions such as time gaps in the data.

## Anomaly Detection and Zero-Shot Learning with Error-Correcting Output Codes

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Zero-shot learning (ZSL) is a process by which a machine learns to recognize previously unseen objects. We propose that ZSL can be used in an incremental learning setting such that a machine can detect unknown objects then integrate them incrementally. Class labels are represented by codewords from an error-correcting code. Using multi-label classification, anomalies are detected and encoded as new concepts based on the output codewords of the unseen objects and their Hamming distances with respect to seen objects. Preliminary results on a set of datasets show how application of error-correcting codes for anomaly detection outperforms current approaches.