

## **A Hybrid Data Mining Algorithm Based System for Intelligent Defence Mission Readiness and Maintenance Scheduling**

**Authors :** Shivam Dwivedi, Sumit Prakash Gupta, Durga Toshniwal

**Abstract :** It is a challenging task in today's date to keep defence forces in the highest state of combat readiness with budgetary constraints. A huge amount of time and money is squandered in the unnecessary and expensive traditional maintenance activities. To overcome this limitation Defence Intelligent Mission Readiness and Maintenance Scheduling System has been proposed, which ameliorates the maintenance system by diagnosing the condition and predicting the maintenance requirements. Based on new data mining algorithms, this system intelligently optimises mission readiness for imminent operations and maintenance scheduling in repair echelons. With modified data mining algorithms such as Weighted Feature Ranking Genetic Algorithm and SVM-Random Forest Linear ensemble, it improves the reliability, availability and safety, alongside reducing maintenance cost and Equipment Out of Action (EOA) time. The results clearly conclude that the introduced algorithms have an edge over the conventional data mining algorithms. The system utilizing the intelligent condition-based maintenance approach improves the operational and maintenance decision strategy of the defence force.

**Keywords :** condition based maintenance, data mining, defence maintenance, ensemble, genetic algorithms, maintenance scheduling, mission capability

**Conference Title :** ICDMD 2017 : International Conference on Data Mining and Database

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** July 10-11, 2017