

- | | |
|-------------------------|---|
| 1. Record Nr. | UNINA990000562480403321 |
| Autore | Society of Naval Architects and Marine Engineers |
| Titolo | Calculation of stopping ability of ships / E.F. Hewins, A.L. Ruiz |
| Pubbl/distr/stampa | New York : SNAME, 1971 |
| Descrizione fisica | 35 p. ; 28 cm |
| Collana | Technical and research bulletin / SNAME ; 3-4 |
| Disciplina | 623.08 |
| Locazione | DININ |
| Collocazione | 05 74 329 |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
-
- | | |
|-------------------------|--|
| 2. Record Nr. | UNINA9910816303403321 |
| Autore | Haigh Karen |
| Titolo | Cognitive Electronic Warfare : An Artificial Intelligence Approach |
| Pubbl/distr/stampa | Norwood : , : Artech House, , 2021
©2021 |
| ISBN | 1-5231-4584-6
1-63081-812-7 |
| Edizione | [1st ed.] |
| Descrizione fisica | 1 online resource (261 pages) |
| Collana | Artech House electronic warfare library |
| Altri autori (Persone) | AndrusenkoJulia |
| Disciplina | 623.043 |
| Soggetti | Artificial intelligence |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Intro -- Cognitive Electronic Warfare: An Artificial Intelligence Approach
-- Contents -- Foreword -- Preface -- 1 Introduction to Cognitive EW
-- 1.1 What Makes a Cognitive System? -- 1.2 A Brief |

Introduction to EW -- 1.3 EW Domain Challenges Viewed from an AI Perspective -- 1.3.1 SA for ES and EW BDA -- 1.3.2 DM for EA, EP, and EBM -- 1.3.3 User Requirements -- 1.3.4 Connection between CR and EW Systems -- 1.3.5 EW System Design Questions -- 1.4 Choices: AI or Traditional? -- 1.5 Reader's Guide -- 1.6 Conclusion -- References -- 2 Objective Function -- 2.1 Observables That Describe the Environment -- 2.1.1 Clustering Environments -- 2.2 Control Parameters to Change Behavior -- 2.3 Metrics to Evaluate Performance -- 2.4 Creating a Utility Function -- 2.5 Utility Function Design Considerations -- 2.6 Conclusion -- References -- 3 ML Primer -- 3.1 Common ML Algorithms -- 3.1.1 SVMs -- 3.1.2 ANNs -- 3.2 Ensemble Methods -- 3.3 Hybrid ML -- 3.4 Open-Set Classification -- 3.5 Generalization and Meta-learning -- 3.6 Algorithmic Trade-Offs -- 3.7 Conclusion -- References -- 4 Electronic Support -- 4.1 Emitter Classification and Characterization -- 4.1.1 Feature Engineering and Behavior Characterization -- 4.1.2 Waveform Classification -- 4.1.3 SEI -- 4.2 Performance Estimation -- 4.3 Multi-Intelligence Data Fusion -- 4.3.1 Data Fusion Approaches -- 4.3.2 Example: 5G Multi-INT Data Fusion for Localization -- 4.3.3 Distributed-Data Fusion -- 4.4 Anomaly Detection -- 4.5 Causal Relationships -- 4.6 Intent Recognition -- 4.6.1 Automatic Target Recognition and Tracking -- 4.7 Conclusion -- References -- 5 EP and EA -- 5.1 Optimization -- 5.1.1 Multi-Objective Optimization -- 5.1.2 Searching Through the Performance Landscape -- 5.1.3 Optimization Metalearning -- 5.2 Scheduling -- 5.3 Anytime Algorithms -- 5.4 Distributed Optimization -- 5.5 Conclusion. References -- 6 EBM -- 6.1 Planning -- 6.1.1 Planning Basics: Problem Definition, and Search -- 6.1.2 Hierarchical Task Networks -- 6.1.3 Action Uncertainty -- 6.1.4 Information Uncertainty -- 6.1.5 Temporal Planning and Resource Management -- 6.1.6 Multiple Timescales -- 6.2 Game Theory -- 6.3 HMI -- 6.4 Conclusion -- References -- 7 Real-Time In-mission Planning and Learning -- 7.1 Execution Monitoring -- 7.1.1 EW BDA -- 7.2 In-Mission Replanning -- 7.3 In-Mission Learning -- 7.3.1 Cognitive Architectures -- 7.3.2 Neural Networks -- 7.3.3 SVMs -- 7.3.4 Multiarmed Bandit -- 7.3.5 MDPs -- 7.3.6 Deep Q-Learning -- 7.4 Conclusion -- References -- 8 Data Management -- 8.1 Data Management Process -- 8.1.1 Metadata -- 8.1.2 Semantics -- 8.1.3 Traceability -- 8.2 Curation and Bias -- 8.3 Data Management -- 8.3.1 Data in an Embedded System -- 8.3.2 Data Diversity -- 8.3.3 Data Augmentation -- 8.3.4 Forgetting -- 8.3.5 Data Security -- 8.4 Conclusion -- References -- 9 Architecture -- 9.1 Software Architecture: Interprocess -- 9.2 Software Architecture: Intraprocess -- 9.3 Hardware Choices -- 9.4 Conclusion -- References -- 10 Test and Evaluation -- 10.1 Scenario Driver -- 10.2 Ablation Testing -- 10.3 Computing Accuracy -- 10.3.1 Regression and Normalized RMSE -- 10.3.2 Classification and Confusion Matrices --

10.3.3Evaluating Strategy Performance -- 10.4Learning Assurance: Evaluating a Cognitive System -- 10.4.1Learning Assurance Process -- 10.4.2Formal Verification Methods -- 10.4.3Empirical and Semiformal Verification Methods -- 10.5Conclusion -- References -- 11 Getting Started: First Steps -- 11.1Development Considerations -- 11.2Tools and Data -- 11.2.1ML Toolkits -- 11.2.2ML Datasets -- 11.2.3RF Data-Generation Tools -- 11.3Conclusion -- References -- Acronyms -- About the Authors -- Index.

Sommario/riassunto

This comprehensive book gives an overview of how cognitive systems and artificial intelligence (AI) can be used in electronic warfare (EW). Readers will learn how EW systems respond more quickly and effectively to battlefield conditions where sophisticated radars and spectrum congestion put a high priority on EW systems that can characterize and classify novel waveforms, discern intent, and devise and test countermeasures. Specific techniques are covered for optimizing a cognitive EW system as well as evaluating its ability to learn new information in real time. The book presents AI for electronic support (ES), including characterization, classification, patterns of life, and intent recognition. Optimization techniques, including temporal tradeoffs and distributed optimization challenges are also discussed. The issues concerning real-time in-mission machine learning and suggests some approaches to address this important challenge are presented and described. The book covers electronic battle management, data management, and knowledge sharing. Evaluation approaches, including how to show that a machine learning system can learn how to handle novel environments, are also discussed. Written by experts with first-hand experience in AI-based EW, this is the first book on in-mission real-time learning and optimization.
