1. Record Nr. UNINA9910970617503321

Titolo	Computer design and computational defense systems / / Nikos E. Mastorakis, editor
Pubbl/distr/stampa	New York, : Nova Science Publishers, c2011
ISBN	1-61209-484-8
Edizione	[1st ed.]
Descrizione fisica	1 online resource (285 p.)
Collana	Computer science, technology and applications
Altri autori (Persone)	MastorakisNikos E
Disciplina	355/.07
Soggetti	High technology - United States System design - United States Information technology - United States Military research - United States
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- COMPUTER DESIGN AND COMPUTATIONAL DEFENSE SYSTEMS -- COMPUTER DESIGN AND COMPUTATIONAL DEFENSE SYSTEMS -- CONTENTS -- PREFACE -- Chapter 1 DESIGNING A HIGH PERFORMANCE INTEGRATED STRATEGY FOR SECURED DISTRIBUTED DATABASE SYSTEMS -- ABSTRACT -- 1. INTRODUCTION -- 2. PARTITIONING THE DATABASE -- 2.1. Database Fragmentation -- 2.1.1. Defining Transactions -- 2.1.2. Creating Segments -- 2.1.3. Generating Fragments -- 2.1.4. Example -- 3. CLUSTERING DISTRIBUTED SITES -- 3.1. Clustering Technique -- 3.1.1. Communication Cost between Sites -- 3.1.2. Clustering Range -- 4. FRAGMENTS ALLOCATION AND REPLICATION -- 4.1. Allocation Replication Procedures -- 4.1.1. Example -- 4.2. Allocation and Replication Cost Functions -- 4.3. Allocating and Replicating Fragments to Clusters -- 4.3.1. Cost of Allocating Fragments to Clusters CA(Tk,Fi, Cj) -- 4.3.2. Cost of Remote Access Fragments to Clusters RA(Tk,Fi,Cj) -- 4.3.3. Allocation Status AS(Tk,Fi,Cj) -- 4.3.4. Example -- 4.4. Allocating Fragments to the Sites -- 5. PERFORMANCE EVALUATION -- 5.1. Database Fragmentation Performance Evaluation -- 5.1.1 Example: -- 5.2. Clustering Performance Evaluation -- 5.2.1 Example: -- 5.3. Fragment Allocation and Replication Performance Evaluation -- 5.3.1 Performance Evaluation at Clusters -- 5.3.1.1. Example -- 5.3.2

Performance Evaluation at Sites -- 5.3.2.1 Example -- 5.4. Network Performance -- 5.4.1. Servers Load -- 5.4.2. Network Delay -- CONCLUSION -- ACKNOWLEDGMENT -- REFERENCES -- Chapter 2 A LOW COST INTELLIGENT INFRARED SYSTEM FOR SUPPORT IN VEHICLE NAVIGATION TASKS -- ABSTRACT -- 1. INTRODUCTION -- 2. DESCRIPTION OF THE INFRARED SYSTEM -- 3. DETECTION AND CLASSIFICATION OF TRAFFIC SIGNS -- 3.1. Data Pre-Processing -- 3.2 Structure of the Neuro-Fuzzy System -- 3.3. Learning Algorithm -- 4. EXTRACTION AND RULE INTERPRETATION -- 5. PROGRESSIVE BRAKE. CONCLUSION -- ACKNOWLEDGMENT -- REFERENCES -- Chapter 3 MEMORY GRID MAPPING: AN ACTIVE MAP LEARNING APPROACH FOR AUTONOMOUS ROBOTS IN UNKNOWN ENVIRONMENTS -- ABSTRACT -- 1. INTRODUCTION -- 2. MEMORY GRID MAPPING MODEL -- 2.1. The Memory Grid Map Model -- 2.2. A Framework for Map Building and Active Exploration -- 1) Map Update -- 2) Position Estimation -- 3) Environmental Exploration -- 4) Map Postprocessing -- 3. THE MAP UPDATE -- 4. THE ENVIRONMENTAL EXPLORATION -- 4.1. The Proposed Exploration Method -- 4.2. The Path Exploring Behavior -- 4.3. The Obstacle Avoidance Behavior -- 5. THE MAP POSTPROCESSING -- 6. EXPERIMENTAL RESULTS -- 6.1. Performance Analysis of Exploration Process -- 6.2. Performance of Map Postprocessing -- 6.3. Performance of Map Using Cells of Different Sizes -- 6.4 Performance in Complex Environments -- DISCUSSION AND CONCLUSION -- ACKNOWLEDGMENT -- REFERENCES -- Chapter 4 OPTIMAL NOZZLE DESIGN WITH MONOTONICITY CONSTRAINTS -- ABSTRACT -- 1. INTRODUCTION -- 2. MATHEMATICAL MODEL -- 3. MODEL PROBLEMS -- 4. NUMERICAL METHODS -- 5. CHOICE OF THE FUNCTIONAL -- 6. NOZZLE DESCRIPTIONS -- 6.1 Problem a. Nozzle Description Using Basis Functions -- 6.2 Problem a. Nozzle Description Using Interpolants -- 6.3. Problem b. Nozzle Description -- 6.4. Numerical Results -- 6.5. Troubles and Ways Around -- 7. WIND TUNNEL DESIGN -- 7.1. Problem Statement and Solving Procedures -- 7.2. Problems -- 7.3. Additional Methods of Nozzle Description -- 7.4. Computation Results -- CONCLUSION -- ACKNOWLEDGMENTS -- REFERENCES -- Chapter 5 STATISTICAL RELIABILITY WITH APPLICATIONS TO DEFENSE -- ABSTRACT -- 1. PROGNOSTICS AND HEALTH MANAGEMENT -- 2. INTEGRATING STATISTICAL SYSTEM RELIABILITY INTO PHM -- 2.1 Overview of Statistical Model -- 3. ENTERPRISE LEVEL LOGISTICS SUPPORT MODELS -- 3.1. Elements of an Enterprise Level Logistics Support Model.
3.2. Selected Enterprise Level Logistic Support Models -- 3.2.1. Enterprise Logistics Model (ELM) -- 3.2.2. Weapon System Sustainment Value Stream Model -- 3.2.3. Support Enterprise Model -- 3.3. Trends within Enterprise Level Logistic Support Modeling -- 3.3.1. Full Lifecycle Time-to-Failure Distributions -- 3.3.1.1. Combined Lifecycle Distribution -- 3.3.1.2. Closed-form Full Lifecycle Distribution -- 3.3.2. PHM in Enterprise Level Logistics Support Models -- 4. SYSTEM-OF-SYSTEMS MODELING &amp -- SIMULATION -- 4.1. Background -- 4.2. Examples of Systems-of-Systems -- 4.2.1. Army's Future Combat System (FCS) as an SoS -- 4.2.2. U.S. National Airspace as an SoS -- 4.2.3. The Nation's Infrastructure as an SoS -- 4.3. System-of-Systems Modeling &amp -- Simulation -- 4.3.1. The System-of-Systems Availability Model (SoSAM) -- 4.3.2. System-of-Systems Analysis Toolset (SoSAT) -- 4.3.2.1. State Model Objects and State Modeling -- 4.3.2.2. Benefits of State Modeling -- 4.4. PHM in System-of-Systems Modeling &amp -- Simulation -- CONCLUSION -- REFERENCES -- Chapter 6 CYBERSECURITY: CURRENT LEGISLATION, EXECUTIVE BRANCH INITIATIVES, AND OPTIONS FOR CONGRESS -- ABSTRACT --

INTRODUCTION -- Research Methodology -- DIFFICULTIES IN ADDRESSING CYBERSECURITY ISSUES -- Recent Initiatives Addressing U. S. Cybersecurity Concerns -- The Comprehensive National Cybersecurity Initiative -- Commission on Cybersecurity for the 44th Presidency -- Obama Administration 60-Day Cyberspace Policy Review -- Common Themes of Recent Cybersecurity Initiatives -- Representative Sampling of Preexisting Executive Branch Programs and Initiatives -- Comparison Matrix -- CONSIDERATIONS AND OPTIONS FOR CONGRESS -- APPENDIX. CYBERSECURITY-RELATED LEGISLATION IN THE 111TH AND 110TH CONGRESSES -- OVERVIEW LIST OF BILLS IN THE 111TH CONGRESS THAT ADDRESS A CYBERSECURITY-RELATED ISSUE.
Directly Tied to Cybersecurity -- Tied via Appropriations or Authorization -- Peripheral Cybersecurity Related or Mentions -- DETAILS ON BILLS IN THE 111TH CONGRESS THAT ADDRESS A CYBERSECURITYRELATED ISSUE -- Procurement -- Title XLI-Procurement (in thousands of dollars) -- Overview of Bills in the 110th Congress That Address(Ed) a Cybersecurity-Related Issue Passed Bills-Public Law -- Bills That Did Not Become Law -- SUMMARY LIST OF STATUTORY FOUNDATIONS FOR CYBERSECURITY LEGISLATION -- REFERENCES -- Chapter 7 ORGANIZATION OF THEMATIC-ORIENTED SEARCH IN GLOBAL INFORMATION SYSTEMS -- ABSTRACT -- 1. INTRODUCTION -- 2. FUZZY MODEL OF THEMATIC-ORIENTED INFORMATION SEARCH SYSTEMS -- 3. FUZZY PRESENTATION OF DOCUMENTS, DOCUMENT COLLECTIONS AND USER REQUESTS -- 4. THEMATIC-ORIENTED INFORMATION SEARCH -- 5. AUTOMATED THEMATIC DOCUMENT CLASSIFICATION AND INCLUSION OF DOCUMENTS IN DOCUMENT COLLECTIONS BASED ON THEMATIC CLOSENESS -- 6. SELECTION OF THEMATICALLY CLOSE COLLECTION FOR SEARCH -- 7. SEARCH OF RELEVANT DOCUMENT IN SELECTED COLLECTION -- 8. ORGANIZATION OF DISTRIBUTED MULTI-SEARCH IN GLOBAL INFORMATION ARRAY -- 9. IMPROVING SEARCH RESULT -- SUMMARY -- REFERENCES -- ABOUT THE AUTHORS -- Chapter8REAL-WORLDEVOLUTIONARYDESIGNS: SECUREEVOLVABLEHARDWAREFORPUBLIC-KEYCRYPTOSYSTEMS -- Abstract -- 1.Introduction -- 2.GeneticProgramming -- 3. EvolvingHardwareforCombinationalDigitalCircuits -- 3.1. CircuitSpecificationEncoding -- 3.2.CircuitSpecificationReproduction -- 3.3.CircuitSpecificationEvaluation -- 4.Evolutionaryvs. ConventionalDesigns -- 5.RSA-BasedCryptosystems -- 6. Evolutionaryvs.ConventionalCryptographicHardware -- 7.Summary -- References -- Chapter9APPLICATIONOFOPENARCHITECTURALINDUSTRIALROBOTSAND ITSSIMULATIONTECHNIQUE -- Abstract -- 1.Introduction -- 2. Position/ForceControlforOpenArchitecturalIndustrialRobots. 2.1.ImpedanceModelFollowingForce/ComplianceControl -- 2.2. FeedfowardPosition/OrientationControl -- 2.3. HybridPosition/ForceControlwithWeakCoupling -- 3.3 DRobotSanderforArtisticDesignedFurniture -- 3.1.Background -- 3.2. RoboticSandingSystemforWoodenPartswithCurvedSurface -- 3.3. SurfaceFollowingControlforRoboticSandingSystem -- 3.4. FeedbackControlofPolishingForce -- 3.5. FeedforwardandFeedbackControlofPosition -- 3.6.HyperCLData -- 3.7. ExperimentalResult -- 4.MoldPolishingRobot -- 4.1.Background -- 4.2. GenerationofMulti-axisCutterLocationData -- 4.3. BasicPolishingSchemeforaBall-endAbrasiveTool -- 4.4. FeedbackControlofPolishingForce -- 4.5. FeedforwardandFeedbackControlofToolPosition -- 4.6.Experiment --

4.6.1.ExperimentalSetup -- 4.6.2.PolishingConditionandExperiment -- 4.6.3.CompliantMotionofaBall-EndAbrasiveTool -- 4.6.4. ExperimentalResult -- 4.7.LimitationofanArticulated-typeIndustrialRobot -- 5.SimulationTechnique -- 5.1. FuzzyForceControllerasanExample -- 5.2. HowtoGeneratetheReferencesforServoSystem -- 5.3.Simulation -- 6. Conclusion -- References -- INDEX.

Sommario/riassunto

This book presents and discusses research in the study of computer science, with a particular focus on computer design and computational defence systems. Topics discussed include memory grid mapping; optimal nozzle design with monotonicity constraints; statistical reliability with applications to defence; cybersecurity; and, real-world evolutionary designs and the applications of open architectural industrial robots.