

COMPUTER NETWORKS

ARTIFICIAL NEURAL NETWORK TRAINING AND SOFTWARE IMPLEMENTATION TECHNIQUES



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Artificial Neural Network Training And Software Implementation Techniques Computer Networks

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Artificial Neural Network Training And Software Implementation Techniques Computer Networks:

Artificial Neural Network Training and Software Implementation Techniques Ali Kattan, Rosni Abdullah, Zong Woo Geem, 2011 Artificial neural networks ANN are widely used in diverse fields of science and industry Though there have been numerous techniques used for their implementations the choice of a specific implementation is subjected to different factors including cost accuracy processing speed and overall performance Featured with synaptic plasticity the process of training is concerned with adjusting the individual weights between each of the individual ANN neurons until we can achieve close to the desired output This book introduces the common trajectory driven and evolutionary based ANN training algorithms

A Design and Development Method for Artificial Neural Network Projects Stefan Vogt, 2000-01-03 Inhaltsangabe Abstract In the 1980s research efforts and successes made artificial neural networks popular Since the 1990s engineers have been using this foundation for problem solving But artificial neural network solutions for real world problems are sometimes hard to find because of the complexity of the domain and because of the vast number of design attributes the engineer has to deal with This thesis provides a structured overview of attributes in the design process of artificial neural networks and reviews technical process models Current development methods for artificial neural networks are then reviewed and critiqued The thesis concludes with a new design and development method for artificial neural networks Inhaltsverzeichnis Table of Contents List of figuresx List of tablesxi Introduction1 1 Design attributes in ANN3 1 1ANN models4 1 1 1Node level7 1 1 2Network level9 1 1 3Training level9 1 2Data and data representation10 1 3Global system design12 1 4Hardware and software implementation13 1 5Characteristics of ANNs15 1 5 1Advantages of ANNs15 1 5 2Limitations and concerns16 2 Technical process models and engineering methods18 2 1Why use an engineering method 18 2 2Evolutionary model of engineering discipline20 2 3Overview of technical process models22 2 3 1Taxonomy of technical process models24 2 3 2Prototyping25 2 3 3Incremental method26 2 3 4Strict contractual approach26 2 3 5Deciding on process models and methods26 2 3 6Examples of process models27 2 3 7Representation of process models27 2 4Quality criteria of process models29 3 Current engineering methods for ANNs30 3 1Why a special method for ANNs 30 3 1 1Are conventional engineering methodologies suitable for ANNs 30 3 2Methods for expert systems31 3 3System identification methods35 3 4Bailey and Thompson37 3 4 1Criticism43 3 5Medsker and Liebowitz44 3 6Jones and Franklin45 3 7Schalko47 3 8Karayiannis and Nicolaos48 3 8 1Criticism49 3 9Nelson and Illingworth50 3 9 1Criticism51 3 10Whittington and Spracklen52 3 10 1Criticism56 3 11Lawrence and Andriola57 3 11 1Criticism58 3 12General criticism of current methodologies58 4 Proposed design and development method60 4 1Development process61 4 1 1Requirement analysis65 4 1 2Specification68 4 1 3Data and domain analysis70 4 1 4Architectural design76 4 1 5Detailed ANN design84 4 1 6ANN implementation92 4 1 7Training93 4 1 8Monitoring training94 4 1 9ANN quality

Software Engineering Methods Design and Application Radek Silhavy, Petr Silhavy, 2024-10-22 This book dives into contemporary research methodologies

emphasising the innovative use of machine learning and statistical techniques in software engineering Exploring software engineering and its integration into system engineering is pivotal in advancing computer science research It features the carefully reviewed proceedings of the Software Engineering Research in System Science session of the 13th Computer Science Online Conference 2024 CSOC 2024 held virtually in April 2024 Software Engineering: Emerging Trends and Practices in System Development Radek Silhavy,Petr Silhavy,2025-11-14 This book discovers peer reviewed research from an international research conference that unites experts in software engineering data science artificial intelligence cybernetics and informatics This book presents cutting edge methods practical case studies and foundational advances that address real world challenges across the computational spectrum Whether you seek rigorous theory proven development practices or visionary perspectives on emerging technologies this book provides a comprehensive resource for researchers practitioners and students committed to shaping the future of digital systems Scientific and Technical Aerospace Reports ,1995

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neural networks to deep learning and non linear problems this book is ideal for computer scientists IT specialists data scientists technologists business owners engineers government agencies researchers academicians and students as well as anyone who is interested in learning more about how artificial neural networks can be used across a wide range of fields

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Deep Learning Innovations for Securing Critical Infrastructures Kumar, Rajeev,Peng, Sheng-Lung,Jain, Parag,Elngar, Ahmed A.,2025-04-18 Deep learning innovations play a crucial role in securing critical infrastructures offering advanced solutions to protect vital systems from sophisticated cyber threats By leveraging neural networks and advanced algorithms deep learning enables real time anomaly detection pattern recognition and predictive threat analysis which are essential for safeguarding critical sectors such as energy transportation healthcare and finance These technologies can identify vulnerabilities respond to breaches and adapt to new attacks providing a strong defense against cyber risks As the digital landscape becomes more interconnected the integration of deep learning into cybersecurity strategies will enhance resilience while ensuring the safe operation of essential services Deep Learning Innovations for Securing Critical Infrastructures explores the cutting edge integration of neural networks and artificial intelligence AI in modern cybersecurity systems It examines how AI particularly neural network models is revolutionizing cybersecurity by automating threat detection analyzing complex data patterns and implementing proactive defense mechanisms This book covers topics such as blockchain cloud computing and event management and is a useful resource for business owners computer engineers data scientists academicians and researchers *Cumulated Index Medicus* ,1994

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