CSH 512: Artificial Neural Networks **Teaching Scheme Examination Scheme** Class Test -20 Marks Lectures: 4 hrs/Week Tutorials: 2 hr/Week Teachers Assessment – 10 Marks Attendance – 20 Marks End Semester Exam – 100 marks Credits: 6 Prerequisite: - Machine Learning 1. Develop the skills to gain a basic understanding of neural network theory and fuzzy logic theory. Course Objectives: 2. Introduce students to artificial neural networks and fuzzy theory from an engineering perspective To give design methodologies for artificial neural networks To provide knowledge for network tunning and overfitting avoidance Laputer neural network implementations. Faculty of Computer Application Thinput Bareilly Schence (Honors) in Computer Science invertispaggeraty, Bareilly (UP

Associative Memory: Introduction, Auto-associative Memory, Bi-directional Hetro-associative memory. Applications of Associative Memory. Unit-4 Self-Organizing Maps (SOMs): Introduction to supervised and unsupervised learning. Competitive Learning, SOMs and their working principles, applications. Unit-5 Adaptive Resonance Theory: Stability-Plasticity Dilemma, ART Ne Works, Iterative Clustering, Unsupervised Learning, ART Networks and their working principles, applications. Unit-6 Introduction to Soft Computing: Basics of Soft Computing, Components of Soft Computing. Introduction to Fuzzy Logic, Genetic Algorithms. Text and Reference Books 1. Neural Networks, Puzzy Logic and Genetics Algorithms-Synthesis and Applications by Reural Networks: A Comprehensive Foundation by Simon S. Hakin, Prentice Hall. 3. Neural Networks: A Comprehensive Foundation by Simon S. Hakin, Prentice Hall. 4. Fundamental of Neural networks: Architecture, Algorithms and Applications by Laurene V. Fausett, Prentice Hall. Course Outcomes: After completing the course, students will be able to: 1. Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory. 2. Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic 3. To understand the fundamental theory and concepts of neural networks, Identify different neural network architectures, algorithms, applications and their limitatiors 4. Understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications 5. Reveal different applications of these models to solve engineering and other problems. Wheat Papilications Figurity of Computer Applications Figurity of Computer Applications Figurity of Computer Applications	6. To demonstrate neural network applications on real-work	a tasks
Unit-1 Fundamental of Neural Networks: Introduction, Model of Artificial Neuron, Architectures, Learning Methods, Taxonomy of NN Systems, Single Layer NN System, Applications. Unit-2 Multilayer NN System and Backpropagation Networks: Background Backpropagation Algorithm, Learning in Multilayer NN Systems. Applications of Backpropagation Algorithm, Learning in Multilayer NN Systems. Applications of Backpropagation Algorithm, Learning in Multilayer NN Systems. Applications of Backpropagation Backpropagation Algorithm, Associative Memory. Bi-cations of Associative Memory. Unit-3 Associative Memory: Introduction, Auto-associative Memory, Bi-cations of Associative Memory. Unit-4 Self-Organizing Maps (SOMs): Introduction to supervised and unsupervised learning. Competitive Self-Organizing Maps (SOMs): Introduction to supervised and unsupervised Learning, SOMs and their working principles, applications. Unit-5 Adaptive Resonance Theory: Stability-Plasticity Dilemma, ART Ne works, Iterative Clustering, Unsupervised Learning, ART Networks and their working principles, applications. Unit-6 Introduction to Soft Computing: Basics of Soft Computing, Components of Soft Computing. Introduction to Fuzzy Logic, Genetic Algorithms. Text and Reference Books 1. Neural Networks: Fuzzy Logic and Genetics Algorithms-Synthesis and Applications by 2. Rajasckaran and GA. Vijaylakshmi Pai, Prentice Hall. 3. Neural Networks: Architecture, Algorithms and Applications by Laurene V. Fausett, Prentice Hall. Course Outcomes: After completing the course, students will be able to: 1. Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic 3. To understand the tundamental theory and concepts of neural networks, Identify different neural network paradigms and its applications 5. Reveal different applications 5. Reveal different applications 6. Reveal different applications 6. Revea	Detailed Syllabus	
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