CS-801 SOFT COMPUTING

UNIT-I

Soft Computing:- Introduction of soft computing, soft computing vs hard computing, various types of soft computing techniques, applications of soft computing.

Introduction to Neural Network:- Concept, biological neural network, evolution of artificial neural network, McCulloch-Pitts neuron models, Learning (Supervise & Unsupervised) and activation function, Models of ANN-Feed forward network and feedback network, Learning Rules Hebbian, Delta, Perceptron Learning and Windrow-Hoff, winner take all.

UNIT – II

Supervised Learning:- Perceptron learning,- Single layer/multilayer, linear Separability, Adaline, Madaline, Back propagation network, RBFN. Application of Neural network in forecasting, data compression and image compression.

UNIT – III

Unsupervised learning:- Kohonen SOM (Theory, Architecture, Flow Chart, Training Algorithm) Counter Propagation (Theory, Full Counter Propagation NET and Forward only counter propagation net), ART (Theory, ART1, ART2), Application of Neural networks in pattern and face recognition, intrusion detection, robotic vision.

UNIT – IV

Fuzzy Set:- Basic Definition and Terminology, Set-theoretic Operations, Member Function, Formulation and Parameterization, Fuzzy rules and fuzzy Reasoning, Extension Principal and Fuzzy Relations, Fuzzy if-then Rules, Fuzzy Inference Systems. Hybrid system including neuro fuzzy hybrid, neuro genetic hybrid and fuzzy genetic hybrid, fuzzy logic controlled GA. Application of Fuzzy logic in solving engineering problems.

UNIT – V

Genetic Algorithm:- Introduction to GA, Simple Genetic Algorithm, terminology and operators of GA (individual, gene, fitness, population, data structure, encoding, selection, crossover, mutation, convergence criteria). Reasons for working of GA and Schema theorem, GA optimization problems including JSPP (Job shop scheduling problem), TSP (Travelling salesman problem), Network design routing, timetabling problem. GA implementation using MATLAB.

REFERENCES:-

1. S.N. Shivnandam, “Principle of soft computing”, Wiley
2. Rich E and Knight K, Artificial Intelligence, TMH, New Delhi.
3. Klir & Yuan, Fuzzy sets & Fuzzy Logic: Theory & Appli., PHI Pub.
4. S, Rajasekaran & G.A. Vijayalakshmi Pai, Neural Networks, Fuzzy Logic & Genetic Algorithms, Synthesis & applications, PHI Publication.

LIST OF EXPERIMENTS

1. Form a Perceptron Net for basic gates with binary input and output
2. Using ADALINE Net, generate XOR function with bipolar inputs and targets
3. To Study the ADALINE NET and their training algorithm
4. To study the MADALINE NET and their training algorithm
5. Learn pattern, target output, learning rate and activation function
6. Obtain the output of the neuron Y for the network shown in fig: Using activation function as: a| binary sigmoidal b| binary sigmoidal [x1 x2 x3] = [0.8 0.6 0.4] [y1 y2 y3] = [0.1 0.3 -0.2] b=0.35
7. To implement AND function using Mc-Culloch Pitts neuron model
8. Design fuzzy inference system for a given problem
9. Implement Travelling salesman problem using Genetic algorithm
10. To study the training algorithm of ART

CS-802 WEB TECHNOLOGY

UNIT-I

An Introduction to Web Technology, History of web Development, Time line, Motivation, Categories of Web Applications, Characteristics of Web Applications, Introduction World Wide Web (WWW), working of web browser and web server, N-tier architecture, services of web server, Common gateway interface (CGI), Uniform Resource Locator (URL).

UNIT-II

History of the internet, internetworking concepts, architecture, and protocol: switch, router, protocols for internetworking, internet address and domains Hyper Text Transfer Protocol (HTTP), feature of HTTP protocol HTTP request-response model, Hyper Text Transfer Protocol Secure (HTTPS). Introduction to Hyper Text Markup Language (HTML), HTML elements, XHTML Syntax and Semantics, extensible Markup Language (XML), element, attributes, entity declarations.

UNIT-III

Information Architecture: The role of the Information Architecture, Collaboration and Communication, Organizing Information, Organizational Challenges, Organizing Web sites parameters and Intranets, Web security issues, Security audit of websites, Web effort estimation, Productivity, Measurement, Quality usability and reliability.

UNIT IV

Introduction to Java Script, Basic concepts, variables and data types, functions, conditional statements, Loops, Operators, Arrays, Standard Objects and form processing in Java, Evaluation of web applications, type of web documents, feature of web pages, multitier web applications.

UNIT V

Introduction to Apache web server, Security in application: authentication, authorization, auditing, security issues, security on the web, proxy server, Firewall, Middleware Concepts, CORBA, Java Remote Method Invocation (RMI), EJB, Microsoft's Distributed Component Object Model (DCOM) Web server and its deployment, Web client, services of web server, mail server proxy server, multimedia server.

REFERENCES:-

1. Web Technologies- A computer science perspective By Jeffrey C. Jackson, Pearson Eduction .
2. Web Technologies-TCP/IP Architecture, and Java Programming By Achyut S. Godbole and Atul Kahate
3. An introduction to Web Design Programming by Paul S. Wang Sanda, S Katila, CENGAGE Learning

LIST OF EXPERIMENTS

1. Introduction to HTML and XHTML.
2. Basic Tags in HTML.
3. Write a program to create lists.
4. Introduction to CSS.
5. Write a program to create menu using HTML and CSS.
6. Introduction to JavaScript.
7. Write a program to print date using JavaScript.
8. Write a program to Sum and Multiply two numbers using JavaScript.
9. Write a program to Show use of alert, confirm and prompt box
10. Write a program to redirect, popup and print function in JavaScript.
11. Create validation Form in JavaScript.

ELECTIVE-II CS-803(A) NETWORK MANAGEMENT

UNIT-I

Network Management Framework, Network Based Managements, Evolution of Network Management: SGMP, CMIP, SNMP. Network Implementation and Management Strategies, Network Management Categories: Performance Management, Fault Management, Configuration Management, Security Managements, Accounting Managements. Network Management Configuration: Centralized Configuration, Distributed Configuration, Selected Management Strategy.

UNIT –II

Management Information Base (MIB), Structure of Management Information, NMS Presentation of the SMI, NMS Meter-ware Network View, Remote Monitoring (RMON), RMON Group. Desktop Management: Desktop Management Interface (DMI), DMI Architecture, DMI Browser, DMI/SNMP Mapping, Desktop SNMP Extension Agents, Setting up LAN Access, SNMP Configuration.

UNIT-III

Introduction, layering, OSI Layering, TCP/IP Layering, Protocols & Standards, Internet standards, Internet administration, Internet Addresses, Internet protocol: introduction, IP header, IP routing, subnet addressing, subnet mask, special case of IP addresses, Comparative Study of IPV4 & IPV6, port numbers Address Resolution Protocol, ARP packet format, Proxy ARP, ARP command, ARP Example, Reverse Address Resolution Protocol (RARP): Introduction, RARP Packet format, RARP Examples, RARP server design

UNIT-IV

Delivery and Routing of IP Packets, Routing Methods, Static versus Dynamic Routing, Routing table and Routing Module, Classless Addressing: CIDR. Internet Protocol (IP), Datagram, Fragmentation, Options, IP Package. Interior and Exterior Routing, Routing information protocol (RIP), Open shortest path first protocol (OSPF), BGP, GGP. Private Networks. Virtual Private Network (VPN), Network Address Translation (NAT).

UNIT –V

Internet Control Message Protocols (ICMP):-Types of message, message format, error reporting, query, checksum, ICMP Package. IGMP, IGMP Message and its Operation, IGMP Package. Transmission control protocol, Process-to-Process Communication, TCP Services Flow Control, TCP Timers. TCP Operation, TCP Package, Application layers protocol, Telnet Protocol, File Transfer Protocol (FTP), Simple Mail Transfer Protocol (SMTP), X-Window system protocol, Remote procedure call, and Network file system.

REFERENCES:

1.Forouzan, TCP/IP Protocol Suite 4th edition, TMH
2.Stevens, TCP/IP Illustrated Volume-I, Pearson
3.J.Richard Burkey, Network Management Concept and Practice, PHI

ELECTIVE-II CS-803(B) DATA MINING & WAREHOUSING

UNIT I

Data Mining: Basic concept, technology and rules, DM techniques, Mining problems, Issues and Challenges in DM, application of data mining, KDD v/s Data Mining, DBMS v/s Data Mining, DM Application areas. Data mining techniques: Exploration of data mining methodologies, decision tables, decision trees, classification rules, association rules, clustering, statistical models & linear models.

UNIT II

Mining Association Rules in Large Databases: Association Rule Mining, Single Dimensional Boolean Association Rules, Multi-Level Association Rule, Apriori Algorithm, FpGrowth Algorithm, Time series mining association rules, latest trends in association rules mining.

UNIT III

Rules & Clustering Techniques: Introduction, Various association algorithms like A Priori, Partition, Pincer search etc. Clustering paradigms; Partitioning algorithms like K- Method, CLARA, CLARANS; Hierarchical clustering, DBSCAN, BIRCH,CURE; Categorical Clustering algorithms, STIRR, ROCK, CACTUS.

UNIT IV

Data Mining of Image and Video: A case study. Image and Video representation techniques, feature extraction, motion analysis, content based image and video retrieval, clustering and association paradigm, knowledge Web mining: Introduction to web mining techniques, web basics and HTTP, data sources on the web, personalization, working with logs, forms and cookies, user identification and path analysis, E-Metrics.

UNIT V

Data Warehousing: Need for data warehousing , Basic elements of data warehousing, Data Mart, Data Warehouse Architecture, extract and load Process, Clean and Transform data, Star, Snowflake and Galaxy Schemas for Multidimensional databases, Fact and dimension data, Partitioning Strategy-Horizontal and Vertical Partitioning.

REFERENCES:-

1. Han, Kamber, “Data Mining Concepts & Techniques”.
2. M.Kaufman. Data Mining Techniques; Arun K.Pujari ; University Press.
3. Mastering Data Mining; Berry Linoff; Wiley
4. Data Mining; Adriaans & Zantinge; Pearson education.

ELECTIVE-II CS-803(C) CYBER LAW & FORENSIC

UNIT-I

Cyber world: an overview, internet and online resources, security of information, digital signature, intellectual property (IP), historical background of IP, IPR governance, National patent offices, the world intellectual property organization (WIPO).

UNIT-II

Introduction about the cyber space, cyber law, regulation of cyber space, scope of cyber laws: ecommerce; online contracts; IPRs (copyright, trademarks and software patenting), etaxation; e-governance and cyber-crimes, cyber law in India with special reference to Information Technology Act, 2000.

UNIT-III

Introduction to computer and cyber-crimes, Cyber-crimes and related concepts, distinction between cyber-crimes and conventional crimes, Cyber criminals and their objectives. Kinds of cyber-crimes cyber stalking; cyber pornography, forgery and fraud, crime related to IPRs, cyber terrorism; computer vandalism etc. Cyber forensics, computer forensics and the law, forensic evidence, computer forensic tools.

UNIT-IV

Regulation of cyber-crimes, Issues relating to investigation, issues relating to jurisdiction, issues relating to evidence, relevant provisions under Information Technology Act 2000, Indian penal code, pornography Act and evidence Act etc.

UNIT-V

Copyright issues in cyberspace: linking, framing, protection of content on web site, international treaties, trademark issues in cyberspace: domain name dispute, cyber-squatting, uniform dispute resolution policy, computer software and related IPR issues.

REFERENCES:

1. Nelson, Phillips, “Computer Forensics and Investigations”, Cengage Learning India.
2. Vinod V. Sople, “Managing Intellectual Property” PHI Learning Private Limited.
3. Dr.R.K.Tiwari P.K.Sastri,K.V. Ravikumar, “Computer crime and Computer Forensics”, First Edition 2002, Select publishers.
4. NIIT, Understanding Forensics in IT, PHI Learning.

ELECTIVE-III CS- 804 (A) WIRELESS NETWORK

UNIT – I

Introduction of Wireless Networks, wireless network architectures, Different Generations of Wireless Networks. Characteristics of the Wireless Medium: Radio Propagation Mechanisms, Path Loss Modeling and Signal Coverage, Effect of Multipath and Doppler, Channel Measurement and Modeling Techniques, Narrowband digital modulation and Coding under wireless fading environments.

UNIT – II

Introduction WLAN technologies: Infrared, UHF narrowband, spread spectrum IEEE802.11: System architecture, protocol architecture, physical layer, MAC layer, 802.11b, 802.11a – Hiper LAN: WATM,BRAN, HiperLAN2 – Bluetooth: Architecture, Radio Layer, Baseband layer, Link manager Protocol, security IEEE802.16WIMAX: Physical layer, MAC, Spectrum allocation for WIMAX.

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UNIT – III

Network Planning: Introduction, Wireless Network Topologies, Cellular Topology, Cell Fundamentals, Signal to Interferences Radio Calculations, Network Planning for CDMA Systems. Wireless Network Operations: Mobility Management, Radio Resources and Power Management.

UNIT – IV

Introduction Mobile IP: IP packet delivery, Agent discovery, tunneling and encapsulation, IPV6 Network layer in the internet Mobile IP session initiation protocol mobile adhoc network: Routing, Destination Sequence distance vector, Dynamic source routing. MOBILE TRANSPORT LAYER TCP enhancements for wireless protocols Traditional TCP: Congestion control, fast retransmit/fast recovery, Implications of mobility Classical TCP improvements: Indirect TCP, Snooping TCP, Mobile TCP, Time out freezing, Selective retransmission, Transaction oriented TCP TCP over 3G wireless networks.

UNIT – V

IEEE 802.15 WPAN, Home RF, Bluetooth, Interference between Bluetooth and 802.11, Adhoc Networks, Introduction to 2.5G and 3G Networks. Overview of UTMS Terrestrial Radio access network UMTS Core network Architecture: 3GMSC, 3GSGSN, 3GGGSN, SMSGMSC/ SMSIWMSC, Firewall, DNS/DHCP High speed Downlink packet access (HSDPA) LTE network architecture and protocol. 4G NETWORKS Introduction – 4G vision – 4G features and challenges Applications of 4G – 4G Technologies: Multicarrier Modulation, Smart antenna techniques, OFDMMIMO systems, Adaptive Modulation and coding with time slot scheduler, Cognitive Radio.

REFERENCES:

1. Erik Dahlman, Stefan Parkvall, Johan Skold and Per Beming, "3G Evolution HSPA and LTE for Mobile Broadband", Second Edition, Academic Press, 2008.
2. Anurag Kumar, D.Manjunath, Joy kuri, "Wireless Networking", First Edition, Elsevier 2011.
3. Simon Haykin, Michael Moher, David Koilpillai, "Modern Wireless Communications", First Edition, Pearson Education 2013

ELECTIVE III CS- 804(B) OBJECT ORIENTED ANALYSIS AND DESIGN

UNIT-I

Introduction: Overview of Object Oriented concepts: Objects and classes, abstraction, generalization and inheritance, encapsulation, multiple inheritance, aggregation abstraction classes, polymorphism, link and association, Need for object oriented approach.

UNIT-II

System design life cycle, object oriented S/W development process model, Object Oriented Analysis, Object Modeling Technique (OMT): object model, function model, relationship among models, object diagrams, state diagrams, data flow diagrams, analysis.

UNIT-III

Case study – the Next Gen POS system, Inception -Use case Modeling - Relating Use cases – include, extend and generalization - Elaboration - Domain Models - Finding conceptual classes and description classes – Associations – Attributes – Domain model refinement – Finding conceptual class Hierarchies - Aggregation and Composition

UNIT-IV

Unified Modeling Language (UML): Class diagram sequence diagram Use case diagram, Collaboration, diagram, state, chart diagram, Activity diagram, component diagram, deployment diagram, Object oriented Database: Relational Vs .object oriented database, the architecture of object oriented database, query language for Object Oriented database

UNIT-V

Mapping design to code – Testing: Issues in OO Testing – Class Testing – OO Integration Testing – GUI Testing – OO System Testing.

REFERENCES:

1. Simon Bennett, Steve Mc Robb and Ray Farmer, ―Object Oriented Systems Analysis and Design Using UML‖ , Fourth Edition, Mc-Graw Hill Education, 2010.

2. Erich Gamma, and Richard Helm, Ralph Johnson, John Vlissides, "Design patterns: Elements of Reusable Object-Oriented Software‖ , Addison-Wesley, 1995. 2

3. Martin Fowler, ―UML Distilled: A Brief Guide to the Standard Object Modeling Language‖ , Third edition, Addison Wesley, 2003.

4. Paul C. Jorgensen, ―Software Testing:- A Craftsman‟ s Approach‖ , Third Edition, Auerbach Publications, Taylor and Francis Group, 2008.

ELECTIVE III CS- 804(C) REAL TIME SYSTEMS

UNIT I

Introduction to real time systems, structure, issues, task classes, performance measures for real time systems-their properties, traditional measures, cost functions and hard deadlines. Estimation of program run time-source code analysis, accounting for pipelining and caches.

UNIT II

Task Assignment and Scheduling-Rate monotonic scheduling algorithm, Preemptive earliest deadline first algorithm, Using primary and alternative tasks. Task Assignment-Utilization balancing algorithm, next fit for RM(Rate monitoring) scheduling, Bin packing assignment algorithm for EDF, Myopic offline scheduling(MOS) algorithm, Focused addressing and bidding(FAB) algorithm, Buddy strategy, Assignment with precedence conditions.

UNIT III

Programming Languages & Tools- Desired language characteristics, data typing, control structures, hierarchical decomposition, packages, run time error handling, Overloading and genetics, Multitasking, Low level programming, Fex, Euclid, Run time support.

UNIT IV

Real time Communication-Communication media, network topologies. Protocols Contention based, Token based, Stop-and-Go, Polled bus, Hierarchical round robin, deadline based.

UNIT V

Fault Tolerance Techniques- Fault, fault types, fault detection, fault and error containment, hardware and software redundancy, time redundancy, information redundancy. Reversal checks, Malicious or Byzantine failures, Integrated failure handling.

REFERENCES:-

1. C.M Krishna and Kang G. Shin, Real Time Systems, TMH
2. Stuart Bennelt, Real time computer control and introduction, Pearson education, 2003
3. Jane W.S Liu, Real time systems, Mc-Graw Hill

CS-806- PROGRAMMING IN PHP

Introduction to PHP:-Evaluation of Php, Basic Syntax, Defining variable and constant, Php Data type, Operator and Expression.

Handling HTML Form With PHP:- Capturing Form Data, Dealing with Multi-value filed, Generating File uploaded form , Redirecting a form after submission.

Decisions and loop:- Making Decisions, Doing Repetitive task with looping , Mixing Decisions and looping with Html.

Function:- What is a function, Define a function, Call by value and Call by reference, Recursive function.

String:- Creating and accessing String, Searching & Replacing String, Formatting String, String Related Library function.

Array:- Anatomy of an Array, Creating index based and Associative array, Accessing array Element, Looping with Index based array, Looping with associative array using each() and foreach(), Some useful Library function.

Working with file and Directories:-Understanding file& directory ,Opening and closing a file, Coping ,renaming and deleting a file , Working with directories, Building a text editor , File Uploading & Downloading.

State management:-Using query string(URL rewriting), Using Hidden field ,Using cookies, Using session .

String matching with regular expression:-What is regular expression, Pattern matching in Php , Replacing text ,Splitting a string with a Regular Expression.

Generating Images with PHP:- Basics of computer Graphics, Creating Image , Manipulating Image, Using text in Image.

References:

(i.) Learning PHP, MySQL, books by ' O' riley Press

(ii.) PHP & MySQL: Novice to Ninja by Kevin Yank

(iii.) PHP for the Web: Visual QuickStart Guide (4th Edition) by Larry Ullman

List of Experiments:-

1. Write a program to print Factorial of any number.
2. Write a program in PHP to print Fibonacci series.
3. Write a program to find whether a number is Armstrong or not.
4. Write a program to print Reverse of any number.
5. Write a program to print Reverse of any number.
6. Write a program to check whether a number is Prime or not.
7. Program to find whether a year is LEAP year or not.
8. Write a Program for finding the biggest number in an array without using any array functions.
9. Write a Program to swap two numbers in PHP.
10. Write a Program for finding the smallest number in an array