

Compression Image File Formats

Critical review and categorization of the most common compression algorithms and storage formats for digital images, comparison of compression versus quality, coding and representation transformations (DCT, wavelets, fractals, etc). (in greek) [download: [pdf](#)]

Dietary Expert System in ECLIPSE (CLP)

Analysis, design, implementation and evaluation of a knowledge representation and inference system for dietary recommendations. Extensive parameterization and adaptation to various factors (sex, age, location, etc) and coding into logic representation using constrain logic programming (CLP) in CLIPS and ECLIPSE platforms. (in greek) [download: [zip](#)]

Analysis and Design Methods for Real-Time Information Systems

Review and critical evaluation of modeling tools for the analysis and design of real-time information systems using structural diagrams and data-flow diagrams. (in greek) [download: [zip](#)]

Prototype Software for Medical Image Processing

Design and implementation of a prototype software library for image processing. The package includes various algorithms that are commonly used in medical imaging equipment, including space-time and frequency filtering, histogram functions, windowing techniques, image smoothing, image sharpening, image enhancement, digital filter design, etc. Implementation in Turbo C++ for MS-DOS, most of it portable. [download: [zip](#)]

Parallel Algorithms for Arithmetic Weather Forecasting

Critical review and categorization of the most common parallel algorithms for weather forecasting using arithmetic analysis (simulation/prediction). The study included various parallel platforms, including MP-x, Cray-T3D, etc, with special focus on models that are currently used in practice by weather agencies in Greece (ETA-SKIRON) and in Europe (HIRLAM). (in greek) [download: [zip](#)]

Geographic Information Systems (GIS)

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Thursday, 10 September 2009 09:51 - Last Updated Sunday, 20 December 2009 07:37

Critical review and categorization of the most common features of modern Geographic Information Systems (GIS) and their modern applications. (in greek) [download: [zip](#)]

Human-Computer Interface using Speech (I)

Critical review and categorization of methods for designing speech-based interfaces, with special focus on multi-modal dialogs (MMD). [download: [zip](#)]

Human-Computer Interface using Speech (II)

Prototype application development in the CSLU platform (CSLU-ann.recognition) for ANN-based speech recognition. [download: ...]

Channel Equalization Techniques

Critical review and categorization of the most common algorithms used for channel equalization via digital signal processing. Analysis of various standard methods (ZFE, LMS, DDE, DFE) and their implementations in digital signal processors (DSP) for everyday applications, including cellular phones, sound processing, modems, etc. (in greek) [download: [zip](#)]

Programming Digital Signal Processors (DSP)

Design and implementation of a prototype software for FIR signal filtering in the TMS320C3x and TMS320C5x families of processors (Texas Instruments). Program development in assembly and C, performance evaluation and optimal parameter configuration for sound processing. [download: ...]

Evaluation of Training Algorithms for Artificial Neural Networks

Critical review and performance analysis of training algorithms in feed-forward artificial neural networks, with special focus on the back-propagation with momentum. Prototype implementation and evaluation of performance on two typical non-linear classification problems, analysis of topology options and network configuration, generalization analysis. (in greek) [download: [zip](#)]

Adaptive Signal Processing

Design and implementation of adaptive signal processing systems in Matlab for noise

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cancelling and channel equalization. (in greek) [download: [zip](#)]

Stockmarket Data Management Application

Analysis, design and implementation of a prototype standalone application for importing, storing and summarizing on-line stockmarket data from the Athens' Stockmarket Exchange (ASE). Implementation in Delphi 5.0 and MS-Access 7.0. (manual in greek) [download: [zip](#)]

Network Infrastructure Proposal for the Mathematics Department Building, University of Ioannina

Preliminary analysis, layout design and summary for a structured networking backbone (LAN/WLAN) for the Mathematics Department building of the University of Ioannina. The study included extensive user requirements and specifications analysis via questionnaires and personal interviews with more than 100 faculty members, collaboration with the technical office of the University, as well as blueprints from the National Telecommunications Company in Greece (OTE). The final proposal included a summary of the required networking equipment, cable layouts per floor and data traffic prediction. (questionnaire in greek) [download: [zip](#)]

Artificial Neural Networks - Architectures and Training Algorithms

Critical review and performance analysis of several neural network architectures and training algorithms (Perceptron, Back-prop, M-adaline, ART1, Kohonen, LVQ/SOM, BSB, etc). (in greek) [download: [pdf](#)]

Informatics Systems Security

A review of the most common symmetric and asymmetric cryptosystems and algorithms for secure protocols and distributed systems. Special focus on digital signatures, file encryption, network security, etc. (in greek) [download: [pdf](#)]



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