A

Adaptation Actions: The basic units of adaptation. These can be generally thought of as the primitive building blocks from which adaptive techniques can be synthesised.

Adaptation Decisions: The results of the reasoning process as to whether and what type of adaptations are required for a given user and interaction context, at a specific point in time.

Adaptation Engineering: The process of design and implementation of the dynamic configuration of an application to the user.

Adaptation Framework: Reusable software architecture for the implementation of adaptable and adaptive systems.

Adaptive Features: The dynamic generation of hypermedia spaces tailored to the characteristics and preferences of the different users.

Adaptive Help: Adaptive system’s response to user’s queries that provides a set of available search strategies in order to improve search results in cases where too many or no results have been found.

Adaptive Virtual Document: An adaptive virtual document can be viewed as a set of resources associated with selection, filtering, organisation, and assembly mechanisms constrained by a user query — selecting a hyperlink, filling in a form, etc. — and a user model.

Adaptive Virtual Reality Museums: A digital museum that employs virtual reality techniques for the presentation of its exhibits and that tailors the contents delivered to its visitors according to their profiles.

Association Rule Mining: Identification of all associations among certain data items, so that the presence of one subset of them in a transaction implies the presence of the others also.
**Bayesian Learning**: A family of probabilistic machine learning methods which rebased on Bayes’ notion of theory validity and Bayes’ rule of conditional probabilities. Assuming a probability distribution of unconditional prior observations and a sequence of conditional events, Bayesian inference allows for deductive and abductive probabilistic reasoning.

**Call to Action**: Screen element, typically an icon, inviting viewers to use an interactive service.

**CF Method**: One of the word weighting methods that is based on the difference of co-occurrence distribution with and without a word. If an appearance of a word significantly changes the co-occurrence distribution, the word is intentionally used in the document, thus it is important. The method doesn’t require a large corpus and is comparable to tfidf.

**Collaborative Filtering**: A learning method of predicting a user’s interest on an item exploiting like-minded users’ opinions.

**Composition Engine**: A composition engine has the ability to compose real documents on the fly on user demand. It is based on a generic template which specifies how the document has to be generated.

**Concept-Based System**: Software (information) system for which the content is organised using a conceptual structure (a set of concepts and their interrelationships), where concepts denote objects of interest.

**Confidence**: In the context of Web-based systems, this is considered as the percentage of transactions containing A that also contain B, where A and B are disjoint subsets of a set of items.

**Content-Based Filtering**: A method of predicting a user’s interest on an item by matching his/her preferences with content features.

**Context Modelling**: Modelling of the interaction context. Although “context” along these lines can have several interpretations, most of these refer collectively to interaction circumstances that are not directly related to, or dependant on, the individual user.

**Contextual Navigation Aids**: Navigation tools in Web sites that help users keep track of their positions. Example contextual navigation aids are menus, index pages, site maps, and navigation histories.

**Cooperative Technologies**: Cooperation can be defined as “working side by side,” with eventual collaboration in specific activities. Cooperative technologies are used to implement user interfaces and tools that support cooperation in networked environments as the World Wide Web.

**Criteria**: In the context of computing, this is considered a checklist that indicates the acceptable level of performance and quality of a system.
**Data Mining**: The task of extracting implicit, previously unknown, potentially useful information.

**Design Methodologies**: A set of methods and tools that can be used to obtain a design in an orderly and controlled manner.

**Design Perspectives**: When designing, a designer can abstract characteristic types of the modelling object and exploit only one characteristic type, such as behaviour, structure, or design goal. Then, using that perspective, s/he develops a model that represents that type of object characteristics.

**Digital Library (DL)**: A large repository of electronic documents and information that is available on the Internet or on CD-ROM.

**Digital TV Environment**: The in-home technological infrastructure for the delivery of digital signal, which includes a set-top box that enables user-driven interactivity through modem or cable return channel.

**Dynamic Database-Driven Web Site**: A Web site containing information sourced directly and immediately from a database.

**Electronic Programme Guide (EPG)**: Displays information about television programmes directly on the television screen, replacing printed guides.

**Empirical Evaluation**: Determination of the “value” of a system, procedure, programme, etc., by means of an empirical study.

**Empirical Study**: Activity that uses direct or indirect observation as its test of reality (e.g., in an experiment, case study, survey, etc.).

**Enhanced Television**: An interactive application closely tied to the content of a television programme.

**Evaluation Framework**: A system of rules, ideas, and recommendations that is used to plan, perform, analyse, and interpret an empirical evaluation.

**Evaluation Guidelines**: Recommendations and hints intended to advise people on how to evaluate an adaptive hypermedia system.

**Experiment**: A scientific method to verify or falsify a hypothesis, or identify a causal relationship between phenomena by observations.

**Familiar Word**: A word that a user often sees. If we can monitor a user’s browsing, the frequent words are considered to be familiar to the user. In other words, a familiar word is a frequent word in documents that a user read in the past.

**Filtering**: In Web-based systems, filtering techniques are used to refine selections, content, or search results by considering some constraints (e.g., context-related constraints, user model-related constraints, etc.) on the resources provided. This
leads to keeping only a subset of the resources. Filtering can also be viewed as an adaptive navigation method from which adaptive content can be derived (e.g., link annotation or hiding).

**Fuzzy Sets:** An extension of the classical sets used in fuzzy logic theory. Essentially, elements in a fuzzy set can be assigned degrees of membership to the set in the interval [0, 1]. Fuzzy sets are considered to convey vague or imprecise information.

**G**

**Goal Conditions:** Underneath application descriptions related to external concepts to be considered by an application realisation, such as a requirement to contemplate collaboration.

**Graph Model:** A set of dots, called vertices, connected by links, called edges. Depending on the applications, edges may or may not have a direction; edges joining a vertex to itself may or may not be allowed, and vertices and/or edges may be assigned weights, i.e., numbers.

**H**

**Hypermedia Models:** Abstract notations that are used for the description of hypermedia systems at a high level of abstraction. Such models can be used to describe concrete hypermedia systems with diverse technological support. Examples of such systems are Web applications.

**I**

**Information Imperfection:** A general term that encompasses imprecision, uncertainty, and ambiguity, among other varieties of ignorance. Two of the main classes of information imperfection are imprecision and uncertainty. The former is associated with the inexistence of clear boundaries in categories, and the latter is associated with the degree of belief an agent has about a particular knowledge item.

**Information Search and Retrieval.** Information search encompasses the activities users carry out to fulfil a given information need. Information retrieval as a technological field is considered to be a concrete activity that enables users to obtain resources by matching queries that are intended to express information needs.

**Information-Seeking Model:** A representation that illustrates the most important variables and associated parameters of the information-seeking process.

**Information-Seeking Strategies:** Systematic approaches and tactics applied by users when looking for information.

**Interaction Method Library:** A toolkit of procedures to view and manipulate objects; they can be dynamically associated with the museum exhibits.

**Interactive Television:** Any system (beyond traditional volume/picture control and channel changing facilities) enabling viewers to interact directly with material on digital television screens.
**Interest Relevancy Measure (IRM):** Measures a user’s interest to a topical word based on the user’s browsing history. It is based on a similar approach to CF method. If a word often co-occurs with the user’s familiar words, the word is considered to be relevant to the user’s interest.

**K**

**Knowledge Management Systems (KMSs):** Information systems dedicated to manage organisational knowledge.

**L**

**Lifestyle Segmentation:** A marketing approach that divides consumers into groups of people with common lifestyle characteristics and behaviour.

**Lost in Hyperspace:** The problem of users failing to identify their current position in a Web site, to reconstruct the way that led to this position, or to distinguish among different options for moving on from this position.

**M**

**Machine Learning:** An artificial intelligence field concerned with the development of algorithms and computer programmes which acquire knowledge about their operating environment and learn to automatically improve with experience.

**Model Update Actions:** A special case of Adaptation Actions (see definition), which directly, or indirectly, cause modifications in the system’s dynamically maintained models.

**N**

**Navigation Path:** A graph model of the user navigation through a Web site; the vertices represent the pages visited and the edges represent the links followed. The navigation path can be seen as an overlay of the site structure.

**Navigation Pattern:** An observable regularity in the user navigation path, which may indicate the user’s navigation strategy (e.g., free exploration or goal-directed browsing) or usability problems.

**Node and Edge Notation:** A graphing notation representing data items as points (nodes) and the relationship between data items as lines (edges).

**Novice Users:** Users with limited system experience or domain knowledge.

**O**

**Ontology:** Ontologies have been developed in artificial intelligence to provide a shared and common understanding of a domain that can be communicated between different agents (human and artificial). The ontology provides an abstract model
of the domain that uses explicitly defined concepts and relations on their use, and not restricted to some individual but accepted by a group.

**Organisation:** Associates the content to one or more structures that have to be coherent and understandable by the user.

**Pattern Discovery:** Application of data mining algorithms to pre-processed data for the discovery of useful patterns.

**Personalisation of KMS:** The process that enables interface customisation, adaptations of the functionality, structure, content, and modality in order to align with the preferences of the individual users.

**Plan Recognition:** A task concerned with the problem of identifying a user’s goal from observing actions. Knowing about possible goals in an application environment and with a knowledge base of plans or recipes that can be combined to achieve these goals, a plan recogniser maps sequences of actions as instantiations of atomic plans to more general plans.

**Platform:** A network typically terrestrial, satellite, or cable based — for distributing video and interactivity.

**Recommender Systems:** Systems that, from a large space of possible options, select and present to the user items relevant to his/her information needs.

**Relational Learning:** A discipline in machine learning focussing on relational dependencies between concepts describing objects of the domain. Instead of clustering similar objects or probabilistically predicting a target function’s value, relational learning takes background knowledge in order to explain observations by inventing new rules or concept descriptions.

**Resource Semantic Information:** Information attached to museum resources (pictures, sounds, 3D models, etc.) which describes aspects of the meaning of these resources.

**Selection:** Consists of applying information retrieval methods on an information space (database, Web, etc.). It must find the relevant set of resources matching the user query. Selection is combined with organisation to provide the semantic structure of a document.

**Semantic Web:** An extension of the current Web in which information is given well-defined meaning, enabling programmes to understand it.

**Semantic Web Mining:** Identification of associations between each Web document and one or more ontological entities, in order to better interpret the navigational behaviour of users.
**Sequential Pattern Mining:** Identification of all sequential patterns with a user-specified minimum support, where a sequence is a list of transactions ordered by transaction time, and each transaction consists of a set of items.

**Site Structure:** A graph model of a Web site; the vertices represent the pages and the edges represent the links. Graph theory can be used to analyse the structure.

**Software Agents:** Software entities having one or more of the following characteristics: autonomy, situatedness, reactive, proactive, or social abilities.

**Statistical Learning:** A method that addresses separation problems in high-dimensional spaces. Learning problems are represented in a vector space and hypotheses are separating planes. The great advantage of statistical learning is that only some domain knowledge is required. The most popular techniques are artificial neural networks (with various neuron models and learning rules), self-organising maps, and support vector machines.

**T**

**Task-Based System:** Information system that uses application-related (e.g., instructional) tasks as the basis for structuring, sequencing, retrieving, and navigating the content.

**tfidf:** One of the popular word weighting methods that is based on frequency of a word in a target document compared to other documents. If this value is high, it means the word is likely to represent the document well and it discriminates the document from other documents.

**U**

**User Model:** A model that describes relevant aspects of a user who interacts with a system. Depending on the application domain, it contains knowledge about a user’s preferences, skills, abilities, goals, needs, or interests. It is used to tailor a system’s behaviour to the user by adapting to the user’s needs in a non-trivial way.

**User Model Database:** A database with information for each user. This information may either be invariant throughout the visit (e.g., language and bandwidth) or vary depending on the user’s actions (e.g., the user shows a preference towards ceramic antiquities).

**User Modelling Engine:** A software module that combines information regarding user activities to derive which are the interests of each individual user.

**User Ontology:** Ontology-based user model representations.

**User Path:** A sequence of Web pages visited by a user.

**V**

**VALS:** A systematic classification of American population into eight clusters of consumers based on psychographic research data, developed at SRI International.
**Virtual Environment Generator:** A software module that dynamically creates virtual environments for the visitors of the museum, taking into account their requests and interests, as well as the available resources and the associated semantic information.

**Virtual Reality Museum or Virtual Museum:** An electronic version of a real-world museum built with virtual reality technology.

**Visualisation:** A method of presenting data or information in graphical form. Visualisations can be used for the discovery and identification of patterns in data.

**Walled Garden:** A collection of services, typically from a range of providers, displayed by a TV platform operator for its customers.

**Web Content Mining:** Processing of the content of the hypermedia system with the use of data mining techniques.

**Web Information System:** Software application for storing, maintaining, and providing information for a business process or organisation, that uses technology to deliver the information via the World Wide Web.

**Web Server Access Log:** Complete review of the access of a specific server from various clients over a period of time.

**Web Structure Mining:** Processing of the structure of the hypermedia system with the use of data mining techniques.

**Web Usage Mining:** Processing of raw user access data with the use of data mining techniques.

**Web/Educational Authoring Tools:** Software tools used by users (“authors”) to create and maintain Web/educational content.

**Word Weighting:** Weighting words in a document based on frequency, co-occurrence, or some other measure. Widely used in document retrieval systems, summarisation systems, and other natural language processing systems.