

A Review on Artificial Neural Network and Ontology Learning in Mobile Technology

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Abstract : *Internet provides us with huge amount of information. It requires the user to interact with browsers and search engines so as to enter the search query and get the relevant result in form of web pages. This information needs to be handled in an intelligent way and represented to user. Information is to be processed and that is where Artificial Neural Network [ANN] and ontology learning helps. Ontology Learning is a automated or semi-automated creation of ontologies, including extracting the corresponding domain terms and the relationships between those concepts from natural language text. Artificial Neural Networks is also another technique that is used for classification of data that can take multiple inputs, work on it and provide us with desired output.*

IndexTerms - *Ontology Learning, Artificial Neural Network..*

I. INTRODUCTION

Mobile search is one of the frequent activity being performed by users nowadays. It requires the user to interact with browsers and search engines so as enter the search query and get the relevant result in form of web pages. In this process search engines exhaustively search internet and use data mining techniques to classify the data fetched and provide it to user as result in form of web pages. Data mining may involve use of ontology learning for classifying the data. Ontology Learning is a automated or semi-automated creation of ontologies, including extracting the corresponding domain terms and the relationships between those concepts from natural language text. Artificial Neural Networks is also another technique that is used for classification of data that can take multiple inputs, work on it and provide us with desired output. Internet serves users with enormous amount of data which is needed in day to day life. Users mainly are interested in applications which can intelligently handle their requests with minimum specification of need when it comes to searching some data on internet. This paper mainly focuses on different technologies that are being implemented in field of mobile technology and information technology.

II. Ontology Learning

Ontology Learning is nothing but creation of ontologies. Ontologies are nothing but creating a representative pattern of available data either manually or automatically. Ontology learning mainly consists of three processes i.e. extraction of data, generation of ontologies, and acquisition of ontologies. Formally we can say ontology learning is process of creation of ontologies using extraction, building and acquisition which results us with stored ontologies that can be used to find similarity between data and bifurcate it easily according to ontologies. Following are some of the technological softwares and trends that are using ontology learning. A hybrid algorithm[1] was used in this approach for obtaining semantically similar metadata from concepts which consisted of use of unsupervised ontology learning. This system mainly took into consideration three major issues related to data used online i.e heterogeneity, ambiguity and ubiquity. In this approach a [1] self-adaptive semantic crawler was being designed which used unsupervised ontology learning with help of hybrid algorithm to classify services being provided to mobile users. It involved discovery, indexing, mining, formatting information available onto information servers and internet . The crawler was unable to meet the expectation in analysis where precision and recall were mainly used. A Knowledge Modeling technique based on ontology learning for helping user learn different language was proposed. Learning styles and habits of user were taken in consideration and based on that ontology learning was used to cope up with pace of user. In this approach Item response Theory [4] was being used to calculate pre and post response of user while learning a topic which were provided to ontology learning for deciding the pace of learning of the user. The limitation encountered was it was specifically designed for language learning making it domain specific. A semantic based generic service oriented architecture [6] used formal ontologies based on facts, concepts, axioms. Knowledge navigation was performed with help of ontology query and reasoning. SOA was mainly a multi-modal interface provider for learner. Automatic Recursive Queries (ARQ) [6] was being used to find out connection between the concepts. Service discovery is achieved by clustering web services into similar clusters. This involves encountering simple as well as complex datatypes on basis of which service discovery is performed. Different similarity calculation methods are used to cluster similarity of features like keyword-match (KM), information-retrieval (IR) and ontology based techniques [2]. So as to overcome the short comes of similarity calculation methods and hybrid method[2] was created by combining information-retrieval and ontology based technique. Agglomerative clustering approach[2] was used so as to cluster the similar services being calculated by hybrid method. Analysis of the results was being carried out with help of precision and recall. Search engines have made task of finding data onto web a simple task by use if indexing technique. Search engines perform tasks of comparing the query with the semantic features of webpages or data on web and provide the user with search results matching as result. This search engine mainly focuses on understanding the semantic similarity of enterprise knowledge management data[7] . The Text2Onto platform is used so as to implemented possible ontologies onto the domain data related to enterprise management. This paper mainly implemented different ontology learning frameworks so a to generate ontologies.

III. Artificial Neural Networks [ANN]

Artificial Neural Networks are made up of nodes that act as a processing unit that pass signals between each other to form a informative web of networks that when interconnect act as a full functional system that carries out a task. Nodes are nothing but processing units that take multiple inputs and give and output that is being passed to other node or we can call it as neuron in other layer. Hence ANN is made up of neurons that are connected through edges that carry processed output from one neuron to another. Remote sensing is performed onto areas

which cannot be touched by objects hence providing exposure to things that are out of reach. Images captured are classified for environmental studies. This classification is carried out with back-propagation algorithm[3] used in ANN. Image classification is carried out using supervised techniques which involves forward feed neural network which is single layer. Implementation of Multi-layer perceptron backpropagation training algorithm[5] was done to test prosthetic limbs by help of matlab based platform that was open-source. MLP was used as a supervised technique that took the neural activities as input and would act in accordance to it so as to signal the limbs to carry out movements. MLP training algorithms resulted in greater accuracies. Facial expression recognition mainly involves decoding different gestures of human face so as to analyse the similarity of two different faces and find the perfect match. This paper mainly involves two different techniques for facial expression recognition and classification. Gabor filter [8] is used to filter facial expressions whereas multilayer artificial neural network [8] is used to classify the facial expressions. Multilayer artificial neural network has to train the neurons created for classifying the expressions that are being filtered by gabor filter. Many times performance of artificial neural network is affected by the factors like network bandwidth, hardware failure. This performance can be enhanced while we have a problem of network bandwidth with help of ANN-based distributed information centric network service[9]. Consumers are connected as nodes in a neural network which act as a lower layer whereas the source that send data acts on upper layer to transfer data peer to peer hence reducing the network bandwidth required in communication.

Conclusion

In this paper, we have discussed different technologies and trends into which ontology learning and artificial neural network are being implemented. Each has its limitations as well as advantages which can be used to provide users with efficient techniques that can be used into mobile technology

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