



Chapter XVII

A Multimedia Database Supports Internet-Based English Learning

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This work presents a novel English distance learning system that was developed through multimedia database and Internet technologies called English Multimedia Corpus. The system includes English articles, dialogs, and videos. A student can study English writing and reading as well as view Web browser listings to connect the Corpus server. In the system, semantic query and "Link grammar" are applied to construct the English Multimedia Corpus system. Furthermore, it promotes the query level from keyword-base and content-based query to a semantic level. The main function of this system is to query the English sentence pattern through keywords from the English Multimedia Corpus. The other function is to detect grammatical errors in written English. Thus, the system not only teaches English grammar, but also, due to its database, allows teachers to understand the most frequent mistakes.

INTRODUCTION

Traditional databases always store the character and numerical data. A primary function manages this basic data, for example, Students, School data, or Companies' employee and financial data. Following computer-based technological advancements, multiple types of data, such as image, audio, video, and hypermedia documents, are applied to represent computer information. Thus, database technologies must support multimedia data, which is known as a multimedia database. It includes many facets, such as content-based retrieval (Chang, Chen, Meng, Sundaram, and Zhong, 1998; Yoshitaka, and Ichikawa, 1999), shape detection and object recognition (Chang, and Hsu, 1992; Flickner, Sawhney, Niblack, Ashley, Huang, Dorn, Gorkani, Hafner, Lee, Petkovic, Steele and Yanker, 1995). Meanwhile, these technical aspects promote its numerous application domains. Many

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examples of distance learning, digital television, and distance medicine are implemented based on those techniques. This study presents an Internet-based English learning environment that applies multimedia database technologies.

Learning English is always a substantial difficulty for Chinese students. Some experts recommend that the best way to learn English is to establish a good study environment and practice it through several various approaches. This should make it a satisfying learning experience. Based on this viewpoint, teachers should provide students with a better environment to learn English. Distance learning based on the Internet is one of the best solutions to create an English learning environment.

Currently, the highly distributed computing environment has been supported and applied popularly. Networking services should perform as tutoring tools. Numerous innovative approaches in this field have been investigated. Through implementing computer-mediated education, many advocates emphasize its positive aspects, and computer-based English learning tutoring systems have been developed by numerous academic research groups (EFLWEB Home Page, English grammar clinic, Foreign Languages for Travelers, G.R. Sampson's SUSANNE Scheme, Interactive Javascript Quizzes for ESL Students, Language Dictionaries and Translators, Linguistic Data Consortium LDC, Link Grammar, Longman Dictionaries Home, Merriam-Webster Online, Online English Grammar, Project Gutenberg Official Home Site, YourDictionary.COM).

Students learning a foreign language through computing devices might encounter many difficulties. Some articles have discussed whether students' frustrations inhibit their educational opportunity (English grammar clinic, Foreign Languages for Travelers, Interactive Javascript Quizzes for ESL Students). These frustrations were based on three interrelated sources: lack of prompt feedback, ambiguous Web instructions, and technical problems.

Hence, an easy-to-use English learning system was developed. The proposed system contains several preparations, which are relevant to English learning. While treating natural language processing, the system is constructed based on Link Grammar. However, in order to separate it from conventional approaches, modifications were included to improve its ability.

The proposed English-learning corpus stores mistakes that students make. That is, all errors that students will probably make on a particular question are determined in advance. Each type of mistake has correcting suggestions and error descriptions. Corpus can not only provide suggestions, but it also records the mistakes that Chinese students might make in English. Another function of this Internet-based multimedia corpus is that a user can locate sample sentence patterns from movie scripts, live dialogs and textbook reading. Each sentence from live dialog and movie captions is parsed and analyzed by Link Grammar, which includes special tags. The end product is then stored within this proposed database system. Consequently, based on semantic retrieval, the system subscribes to query methodology.

In this chapter, English sentence construction will be analyzed first. Notably, the sentence pattern is divided into nine classes. Secondly, each sentence pattern is parsed by link grammar, in which every pattern has a particular tag set. Consequently, the system constructs the query engine with these essential tag sets.

In general, similar learning systems store single sentences or vocabularies and facilitate query through keywords (EFLWEB Home Page, English grammar clinic, Foreign Languages for Travelers, G.R. Sampson's SUSANNE Scheme, Language Dictionaries and Translators, Linguistic Data Consortium LDC, Longman Dictionaries Home, Merriam-Webster Online, Online English Grammar, Project Gutenberg Official Home Site, YourDictionary.COM). Semantic-based retrieval technologies are rarely used. This work

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