Abstract

Semantic document exchange for electronic business is a very important research topic in the field of electronic marketplace. An extremely challenging research aspect is the cross-context semantic document exchange, which is nearly not solved by the existing approaches. Four difficult research problems are found in thesis in cross-context semantic document exchange, which are: semantic term consistency problem, syntactic document structure consistency problem, semantic document structure consistency problem, and cognition consistency problem. To resolve the above four problems, this thesis has contributed a USERDOC APPROACH, which resolves problems through a USERDOC FRAMEWORK. This framework consists of three layers: the bottom layer of Cosign Model resolves the semantic term consistency problem; the middle layer of Dosign resolves the problems of syntactic document structure consistency and semantic document structure consistency; the top layer of Ussign Model resolve cognition consistency problem.

In implementation of USERDOC FRAMEWORK, an assistive mechanism, called NSG, is proposed to find near synonyms in the existing multilingual dictionary in order to reduce the time and effort of collaborative term designers who are designing common terms that resolves semantic term consistency problem. Together with NSG and Dosign Model, a semantic input method (SIM) engine and a SFASFA editor are designed to implement the proposed USERDOC FRAMEWORK.

Applying the Userdoc Framework, a User Interoperability Framework (UIF) is designed and implemented to resolve a very much challenging problem of user interoperability between heterogeneous IoT devices.