

適用於服務導向架構的情境推理系統

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摘要

Because of the introduction of Web service technology, the service-oriented architecture (SOA) has become a rapid developing interoperating platform. In a context-aware environment various devices need to cooperate in different computing environments. It is an appropriate solution to combine Web services with context-aware computing. To develop a feasible reasoning system that can be operated on SOA is the main topic of this paper.

In this paper, a rule-based context reasoning system on SOA is proposed. The system aims at offering users the most appropriate services and information according to the situation. JAVA Expert System Shell (JESS), Microsoft UDDI, and case-based reasoning are used to implement a rule-based context reasoning system. JESS is a rule-based expert system programming language developed by JAVA. There are three parts in JESS: rule-base, fact-base, and inference engine. The rule-base stores relevant knowledge and inferring rules. The fact-base stores the facts which are fundamental and acquired from the environment. Inference engine infers by connecting rule-base and fact-base. The result of inference engine will be sent to Microsoft UDDI to acquire appropriate services. Then the system will find similar case by case-based reasoning and modify it to offer users more variable and appropriate services.

Take a classroom example to explain how this system helps teaching and learning in class. JESS could infer that a student is drowsy or distracted in class from collecting the student's physiological information such as breath, heart beats, and blood pressure, and then suggest which services are needed on teacher's computing devices. Then the teacher could choose the most appropriate service such as sending messages to the student's devices, making sounds, or turning on a focus light to remind the student to concentrate on his lesson or offering interesting information. If the

automatic mode is selected, the system will take the most appropriate service which is derived by the system.

關鍵字：Context-awareness, Service-Oriented Architecture (SOA), Web Services, Rule-base