Interface Definition Language and Object Request Broker for Integration of Distributed Heterogeneous Bioinformatics Software

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ABSTRACT

Component-Based Software Engineering (CBSE) has been touted as the latest revolution in software engineering and bioinformatics field. Computer scientists and biologists are working together to apply this new design approach to the closely-intertwined problems of integrating distributed heterogeneous bioinformatics software into one house. However, interaction and communication of distributed heterogeneous bioinformatics software remains limited in practice because most of software components failed to interact with another component. Therefore, in order to solve interaction and communication problems, CBSE technologies allow computer scientists and biologists to build novel and integrated bioinformatics software via Interface Definition Language (IDL) and Object Request Broker (ORB). Using these technologies, the computer scientists and biologists are able to connect a number of different types of components (e.g. database components, net access components, sequence analysis components, and graphical display components) together to form a new application. Moreover, CBSE technologies are not only can reduce development times and cost but also offers computer scientists and biologists a way to quickly react on dynamic biotechnology requirements. In this paper, we discuss the idea of implementing CBSE technologies in the development of integrated bioinformatics software. Furthermore, this paper also present the current implementation of CBSE technologies in solving interaction and communication problems in various areas of bioinformatics applications (e.g. visualization and simulation, sequence analysis, and data mining) using IDL and ORB.

Keywords: Component-Based Software Engineering, Interface Definition Language, Object Request Broker, Integrated Bioinformatics Software.
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