A Scalable Bioinformatics Analysis Platform based on Microservices Architecture

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Abstract

With the advancement of technologies, web services play a significant role to maintain infrastructure in healthcare domain due to the increasing demand of performance. In such systems, adoption of novel technologies is necessary to increase the productivity and reduce the burden of maintenance associated with legacy systems. Microservices architecture has become prominent in deploying server-side enterprise applications by allowing maintainable functionalities. However, it is challenging to utilize microservices in the domain of bioinformatics, although it enables independent process execution and maintenance. This paper introduces the utilization of microservices architecture to build an optimized platform for bioinformatics analyses. We present a hybrid architecture that consists of different hardware platforms to execute accelerated computational services, independently. The core communication is based on an Application Programming Interface (API) gateway. Furthermore, the paper presents the evaluation of results related to the performance of the proposed solution under varying biological sequences as inputs and algorithms.

Keywords: *Bioinformatics analysis, microservices architecture, enterprise applications*