

## **Adaptive resource control mechanism through reputation-based scheduling in heterogeneous distributed systems**

### **ABSTRACT**

The service-oriented distributed systems such as Grids and Clouds are unified computing platform that connect and share heterogeneous resources including computation resource, storage resource, information resource and knowledge resource. While these systems provide a vast amount of computing power their reliability are often hard to be guaranteed. It is due to the increased complexity of processing (e.g.,overhead, latency) that can indirectly affect the system performance. In this study, we addressed the problem of dynamic control for resource management in distributed computing environment. Our dynamic resource control mechanism is designed based on reputation-based scheduling that aims for sustainable resource sharing. Particularly, each computational resource in the environment has its own reputation value that calculated online by considering the computing capacity and availability. The degree of resource reputation significantly helps in scheduling decisions in terms of successful execution while adaptively monitoring resource availability. Results demonstrate that our resource control mechanism significantly increases successful execution, while leading to robust resource management.

**Keyword:** Distributed systems; Dynamic control; Resource sharing; Task scheduling; Reputation