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QoS Aspects of Loosely Couple Microservices for Solar PV Power Estimation

Deployment of Computational physics through the paradigm of loosely coupled microservices can play a vital role for parallel computing that can be utilized for estimation of solar PV power. As such we propose to deploy a novel model that can be used to perform different computational logic for the domain of physics. We call this model as MicroComPhy (Microservice for Computational Physics). As a prototype deployment we use three mathematical equations for (a) current generation, (b) measurement of junction thermal voltage and (c) Nominal operating cell temperature (NOCT) measurement, which are required for the estimation of solar photovoltaic power generation. The parallel computing through the design pattern of microservice architecture is evaluated through development and deployment of Spring boot application with Apache Tomcat server. The quality of the service is evaluated through the metrics of response time, throughput and hits/s. The correlation of quality metrics is observed. The experimental setup, the quality observation and the statistical analysis will be discussed. It can be concluded that quality metrics for computational physics are stable while executing the parallel computing using microservice architecture.

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