SOLUTION FOR SERVERLESS MICROSERVICES COLD STARTS USING MACHINE LEARNING

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Abstract

Cloud serverless computing is currently one of the most popular concepts in the software engineering industry. Serverless also known as Functions-as-a-Service allows users to deploy functions in the cloud without any control over the resources on which the code runs on. Microservices are lightweight services which performs its own independent process. Each microservice performs only one function. Due to the scale to zero functionality idle services with no traffic will be depreciated from server's memory to reduce the memory usage. When such idle services are requested, the code will be loaded back in to the server's memory which causes a startup delay known as cold starts. Cold starts increase the time taken for the application to respond to the user.

Due to this problem a solution is suggested to predict the micro-services that the user customer will use and start them up before the user uses them. In order to develop proposed solution Frequency pattern mining machine learning algorithm was selected as the prediction model. The micro-services prediction system will be implemented as a REST service which will receive user paths and start up service according to the prediction.

The proposed solution was evaluated by domain experts and software engineers working in the industry.

Keywords: Machine learning, Serverless, Microservice, cold-starts, Frequency pattern mining