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Cloud Computing Based Bushfire Prediction for Cyber-Physical Emergency Applications

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Abstract

In the past few years, several studies proposed to reduce the impact of bushfires by mapping their occurrences and spread. Most of these prediction/mapping tools and models were designed to run either on a single local machine or a High performance cluster, neither of which can scale with users' needs. The process of installing these tools and models their configuration can itself be a tedious and time consuming process. Thus making them, not suitable for time constraint cyber-physical emergency systems. In this research, to improve the efficiency of the fire prediction process and make this service available to several users in a scalable and cost-effective manner, we propose a scalable Cloud based bushfire prediction framework, which allows forecasting of the probability of fire occurrences in different regions of interest. The framework automates the process of selecting particular bushfire models for specific regions and scheduling users' requests within their specified deadlines. The evaluation results show that our Cloud based bushfire prediction system can scale resources and meet user requirements.

[*] Fully documented templates are available in the elsarticle package on CTAN.

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