

ملخص البحث رقم (1)

السيد الأستاذ الدكتور/ مقرر اللجنة العلمية الدائمة لترقية الأساتذة والأساتذة المساعدين للحاسبات والمعلومات

تحية طيبة وبعد -أحيط سيادتكم علما بان البحث رقم 1 بياناته كالتالي

عنوان البحث باللغة الانجليزية:

Case Study: Spark GPU-Enabled Framework to Control COVID-19 Spread Using Cell-

Phone Spatio-Temporal Data

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ملخص البحث باللغة الانجليزية :

Nowadays, the world is fighting a dangerous form of Coronavirus that represents an emerging pandemic. Since its early appearance in China Wuhan city, many countries undertook several strict regulations including lockdowns and social distancing measures. Unfortunately, these procedures have badly impacted the world economy. Detecting and isolating positive/probable virus infected cases using a tree tracking mechanism constitutes a backbone for containing and resisting such fast spreading disease. For helping this hard effort, this research presents an innovative case study based on big data processing techniques to build a complete tracking system able to identify the central areas of infected/suspected people, and the new suspected cases using health records integration with mobile stations spatio-temporal data logs. The main idea is to identify the positive cases historical movements by tracking their phone location for the last 14 days (i.e., the virus incubation period). Then, by acquiring the citizen's mobile phone locations for the same period, the system will be able to measure the Euclidean

distances between positive case locations and other nearby people to identify the in-contact suspected-cases using parallel clustering and classification techniques. Moreover, the daily change of the clusters size and its centroids will be used to predict new regions of infection, as well as, new cases. Moreover, this approach will support infection avoidance by alerting people approaching areas of high probability of infection using their mobile GPS location. This case study has been developed as a simulation system consisting of three components; positive cases/citizens movement's data generation subsystem, big data processing platform including CPU/GPU tasks, and data visualization/map geotagging subsystem. The processing of such a big data system requires intensive computing tasks. Therefore, GPU tasks carried out to achieve high performance and accelerate the data processing.

البحث مشتق من رسالة علمية

يقع البحث ضمن مجالات البحث بالقسم العلمي