

CYBER FORAGING BASED ON-DEVICE AI FRAMEWORK FOR MOBILE APPLICATIONS

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Abstract

Smartphones are getting more complex and sophisticated, more powerful than before. Similarly, mobile applications are also getting advanced in order to cater users a better personalized experience. Machine learning and augmented reality are some of the cutting-edge technologies which are popular with mobile applications. On-device AI is also one of the trending topics nowadays. On-device AI is a technology which runs machine learning tasks on the device to provide better privacy, high reliability and, minimize latency. However, due to this transformation, mobile applications are becoming more power-consuming and it is becoming a burning problem for especially low end smartphones. Since mobile devices are often resource-limited devices, it's harder to run more complex applications on these devices. The above-mentioned problem is also applicable when it comes to on-device inference based applications.

This research tries to address the above problem by proposing an offloading mechanism for mobile devices to perform on-device inference machine learning tasks. The research focused on developing a library that can be integrate to new or existing on-device AI based Android applications, which allows these applications to offload their machine learning tasks to nearby resource-rich devices. Further, the system is designed to provide an automated decision-making process that decides when to offload based on different factors.

Subject Descriptors:

Distributed Systems, Machine Learning

Keywords:

On-Device AI, Cyber Foraging, Mobile Applications