

Design of an image grid portal for embedded system

蔡運昇、王欣平

E-mail: 322067@mail.dyu.edu.tw

ABSTRACT

Embedded systems are popular and its usages are growing rapidly. Most frequent embedded systems today include but not limit to PDA, GPS, and smart phone. The smart phone is the most noticeable application of the embedded systems for it has the potential to become ultimate data terminal equipment of the pervading cloud computing. Embedded system has limited computing resources comparing to the traditional desktop system. It operates on slow CPU, confined memory spaces, and battery. The resource restrictions hamper many applications from being implemented on embedded platform and fine-tuning the application to meet these restrictions has being a daunting task for most of the embedded system designers. This thesis proposes an image portal, targeting the high quality image applications, connecting the cloud and an Android based cellular phone. The image portal serves as an agent that bridges users' requests to the cloud and performs necessary image pre-processing for the users. More importantly, the image pre-processing operations on the portal will alleviate user side resources usage and enhance overall performance. The portal is a Web Server using XML-RPC protocol and equipped with two image processing services Divimage and Hqx which render all pre-processing requests. For testing, a typical application scenario is derived. Two sessions either with or without image pre-processing of the portal are performed under the same scenario. Operating latencies of these sessions are compared and analyzed. It shows while neglecting network latency the proposed portal with image-preprocessing services runs faster and consumes less user side computing power.

Keywords : Smart Phone、Cloud computing、Android

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