Digital Poster Management Application on a SAGE2-based Multiple Display System

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Abstract

Digital posters are an impressive presentation media that can replace paper posters used at technical conferences. An organizer of such events requires effective management of multiple digital posters and multiple monitors. This paper proposes a digital poster management system on a multiple display environment. To control multiple monitors, we employ SAGE2 technology, which is middleware for collaborative working in high resolution that allows multiple users to simultaneously control the display of the same monitor from browsers. Managing multiple monitors is designed using the main SAGE2 screen to manage and control other SAGE2 screens. We have implemented a cost effective multiple display system using Raspberry Pi computers. For digital posters, we have extended a PDF viewer to support automatic page advancing with an arbitrary interval. Also, we have developed a SAGE2 multiple monitor application that can be used to control the PDF viewer presentation on multiple SAGE2 displays. The current implementation can manage and control what should be shown on each SAGE2 display. Future work includes implementing a PDF uploading function and evaluating the performance and effectiveness in a real exhibition environment.

Background

SAGE2 is open source software that provides multiple users to access, display, and share an assortment of data intensive information using a pointer on the shared screen through web browsers then interact with content in SAGE2 shared display via WiFi connection in real time.

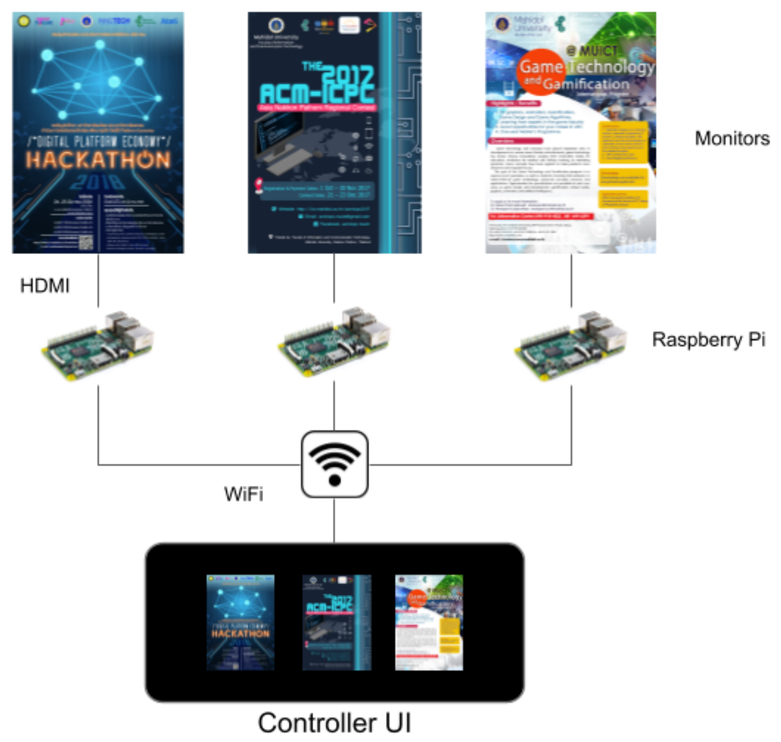
SAGE2 on Raspberry Pi: The Raspberry Pi 3 is able to support SAGE2 using the Raspbian operating system and important resources include Node JS, Web browsers, and some SAGE2 dependencies getting minimal loss of performing tasks.

Technical Tools

SAGE2™

HTML CSS JS jQuery

System Architecture



Implementation & Results

1. SAGE2 installation on Raspberry Pi

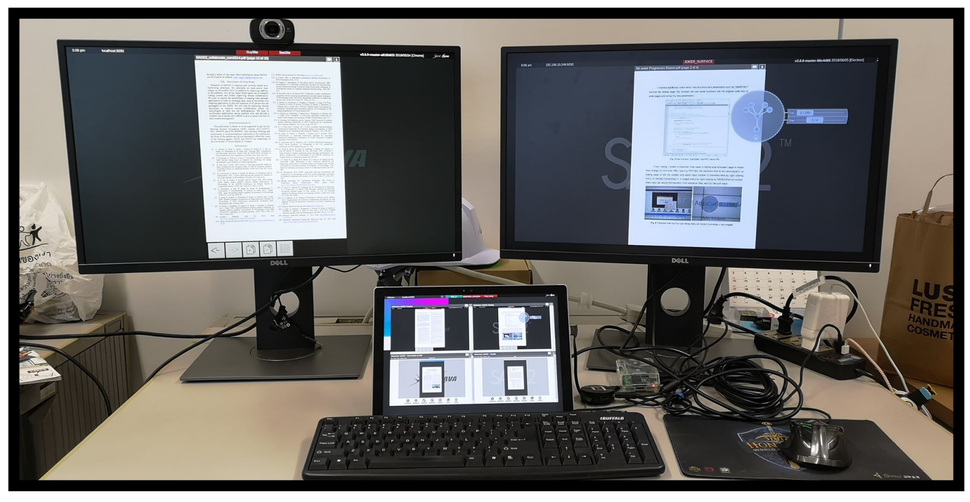
To save a cost of computers replaced by Raspberry Pi. We install SAGE2 in Raspberry Pi follow backgrounds information device that is successful and works smoothly approximate to running on PC.

2. SAGE2 PDF Viewer Improvement

According to the limitation of SAGE2. We improve the PDF viewer by adding function to scroll pages automatically with adjusted display time of each page.
In the result, it works by right clicking function and widget function to set display time and start scrolling.

3. SAGE2 Digital Poster Management Application

We create a new application supporting control more than one other SAGE2 sites, it is SAGE2 multiple monitoring. Unfortunately, it could not send PDF files to Raspberry Pis thus we have to prepare PDF files in advance. And it is quite complex and should be improved in the future.



Conclusion We have successfully implemented a low cost, portable, distributed poster management application. The application can control PDF viewers in SAGE2 displays with automatic advancing pages, however, its usability is limited and needs improvement. It also cannot transfer PDF files to other remote SAGE2 sites, thus users are required to transfer PDF files to those sites in advance. Furthermore, there is no function to manage multiple monitors to show the same digital poster simultaneously. Our future work will implement these functions to enable better management and usability, especially the remote-site basic function for uploading PDF files to other SAGE2 sites.

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