Low cost patient infotainment terminals by Free Willy (™) of Vayu Vaidya.

Dr Bheemaiah, Anil Kumar, A.B Seattle W.A 98125
miyawaki@yopmail.com

Abstract:
We describe low cost Windows 10 based Infotainment Terminals for CDS and Infotainment end uses, using free refurbished hardware and inexpensive stick PCs, running Windows 10. These infotainment terminals are browser based and use the SchizoOS developed at Vayu Vaidya, and cost less than $15 each. A clinical trial of one such terminal with a population of 100 or more users with usability feedback, constitutes future work.
This terminal is developed with an end use in rural medicine and in developing or underdeveloped nations, and third world communities.
Keywords:
Windows 10 IoT, SchizoOS, low cost computing, stick PCs, Infotainment Terminals, Amazon Alexa.

What:
SchizoOS is a browser OS written in JS, developed for a low cost Windows 10 based stick PC, to be used with low cost or complementary refurbished monitors to make patient infotainment systems for the developing and third world countries.
How:
Inexpensive USB stick hardware is integrated with Raspberry Pi W Zero hardware to create an inexpensive stick PC, running Windows 10 IoT for ARM architectures with an edge/chromium browser based OS called SchizoOS. This OS has conversation search, bot based search and Alexa skills for a variety of Infotainment services.
Why:
Studies have shown the reduction in in- patient admission and hospitalization periods in major ailments with patient infotainment systems, coupled with transparency in prognosis, decision support, on demand telemedicine, second opinions and easy access to patient records and CDS support to the medical community.

Applications:
Patient Infotainment Terminals.

Code Base:Vayu Vaidya SchizoOS.

Introduction.

Stick PCs have been a viable and low power mobile computing solution, (Contributors to Wikimedia projects 2012)while several vendors like Intel (“Intel® Compute Stick” n.d.)and Lenovo computers (“Amazon.com: Lenovo Ideacentre Stick 300 Computer (90F20000US): Computers & Accessories” n.d.)have product offerings , creating computers usable as both desktop and mobile computing and in industrial and medical applications. The added advantage of this computing platform is the bridging of media centric devices and mainstream computing, All HDMI television sets and monitors are amenable to USB PC sticks, usable with multimedia keyboards.(Tan 2016)
WIth an end use of literacy and for medical informatics we have used a popular hobby electronics hardware , the raspberry pi and have created an inexpensive PC stick supporting Windows 10 on it.(TerryWarwick n.d.)

Problem Definition.

SchizoOS is a browser OS written in JS, developed for a low cost Windows 10 based stick PC, to be used with low cost or complementary refurbished monitors to make patient infotainment systems for the developing and third world countries.

Background.

Electronic recycling is part of the C2C program, of an economy of refurbished electronics, with a view towards cloud based thin clients, the dream of inexpensive network computers using serverless computing is real with PC sticks, (“Recycling Electronics - Amazon Seller Central” n.d.)inexpensive refurbished monitors are installed as patient infotainment terminals, with upgradable computing, an evolution of PC sticks in GFLOP capacity. This is part of the Free Willy project of Vayu Vaidya. (B 2020) (“Hackster.io” n.d.)

SchizoOS
SchizoOS is a browser operating system, much like chromium, towards a mental healthcare end use. It incorporates CUI as voice, text and is media ready, with social engineering for mental wellness.
schizoOS is meant for the target audience of medical professionals and patients with an emphasis on wellness and drug resistant or treatment resistant disorders.
The user interface is a simple icon based system with social engineering for autism, bipolar I and II and persecutory auditory hallucinations. It also serves as an infotainment platform with a rich media library of information, EHR records and a clinical management software with cloud computing using AWS.
shizoOS uses Amazon Prime, enabling a variety of infotainment media, accessible through amazon's portals.

schizoOS uses javascript , with libraries and frameworks like react, RxJS and RxJS ++.

AWS based digital medical services.

There are a number of CDS, EHR and clinical management services to choose from. (“Healthcare Partner Solutions in the Cloud - Amazon Web Services” n.d.)The primary CDS system supported by schizoOS is the HL7 CDS webhooks. Any API can be supported by schizoOS by the addition of javascript code. schizoOS is open source and will be available soon on github.
OpenEMR is a freeware, using AWS for hosting.(“AWS Marketplace: OpenEMR Cloud - Standard Edition” n.d.)

Project Echo.

SchizoOS implements continuous data mining of records, after filtering out sensitive patient information, to create impersonal records for integration in an CDS, for expert system knowledge sharing, part of the meta echo movement.(“About ECHO | Project ECHO” n.d.) This is a tool to assist not replace the medical community so that specialist expertise is available in a democratization of knowledge on patient infotainment systems through schizoOS.

Discussion.

The SchizoOS , is a browser OS written primarily in python and javascript. It is an OS exclusively for mental health applications and for use as medical informatics. In this paper we explore its use with Amazon Prime (Contributors to Wikimedia projects 2017)as an infotainment channel, AWS based EHR services and clinical management along with chatbot/Alexa Skill and Google conversation search based CDS systems.

Future Work.

A clinical study of a monitor and PC Stick system with 100 or more users for CDS use for early diagnosis for off the shelf pharmaceuticals. A study at a local resource center at St Paul MN is to be conducted and published on pubmed.(“Conducting Research at Neighborhood House - Neighborhood House” 2015)(“Neighborhood Development Center” 2018)

References.

“About ECHO | Project ECHO.” n.d. Accessed May 19, 2020. https://echo.unm.edu/.

“Amazon.com: Lenovo Ideacentre Stick 300 Computer (90F20000US): Computers & Accessories.” n.d. Accessed May 18, 2020. https://www.amazon.com/Lenovo-Ideacentre-Stick-Computer-90F20000US/dp/B014644NPI.

“AWS Marketplace: OpenEMR Cloud - Standard Edition.” n.d. Accessed May 19, 2020. https://aws.amazon.com/marketplace/pp/OEMR-OpenEMR-Cloud-Standard-Edition/B07BBT4C1H.

B, Anil Kumar. 2020. “CoreDump: Some Hacker Tools. - Anil Kumar B - Medium,” February. https://medium.com/@bheemaiah/coredump-some-hacker-tools-bdf8e7501778.

“Conducting Research at Neighborhood House - Neighborhood House.” 2015. Neighborhood House. February 1, 2015. http://neighb.org/conducting-research-at-neighborhood-house/.

Contributors to Wikimedia projects. 2012.

"Stick PC," August. https://en.wikipedia.org/wiki/Stick_PC.
———. 2017. "Amazon Prime," January. https://en.wikipedia.org/wiki/Amazon_Prime.
"Hackster.io." n.d. Accessed May 18, 2020. https://www.hackster.io/win-win/retro-nokia-088666.
"Healthcare Partner Solutions in the Cloud - Amazon Web Services." n.d. Amazon Web Services, Inc. Accessed May 19, 2020. https://aws.amazon.com/health/healthcare-partners/.
"Intel® Compute Stick." n.d. Intel. Accessed May 18, 2020. https://www.intel.com/content/www/us/en/products/boards-kits/compute-stick.html.
"Neighborhood Development Center." 2018. Wilder Foundation. April 16, 2018. https://www.wilder.org/wilder-research/research-library/neighborhood-development-center.
"Recycling Electronics - Amazon Seller Central." n.d. Accessed May 18, 2020. https://sellercentral.amazon.com/gp/help/external/G202089380?language=en_US.
Tan, Samuel J. 2016. "Top 10 Best Stick PCs - Bring the PC to the Living Room | Colour My Learning." Colour My Learning. March 21, 2016. https://www.colourmylearning.com/2016/03/top-10-best-stick-pcs-bring-the-pc-to-the-living-room/.
TerryWarwick. n.d. "Overview of Windows 10 IoT Core - Windows IoT." Accessed May 18, 2020. https://docs.microsoft.com/en-us/windows/iot-core/windows-iot-core.