SOLUTION BRIEF
2nd Generation Intel® Core™ Processors
Auto Stereoscopic 3D (Auto-S3D) Solutions
from 3D International*
Embedded Computing

Creating a WOW Factor with Glasses-Free 3D Digital Signage

Vending machine proof-of-concept delivers an amazing interactive experience

Figure 1. Sunglasses Vending Machine

Unlike any other sign, an Auto-S3D digital signage display with products and scenery floating naturally in air immediately draws the attention of people passing by. Potential customers can literally stick their fingers into the 3D objects on the display, which creates a unique immersive experience. With a tap or swipe on the touchscreen, it's possible to see products from different angles and quickly learn more about features.

Intel and 3D International* teamed up to demonstrate an intelligent vending machine with Auto-S3D digital signage for the front panel. The proof-of-concept leverages a new technology, called Chromatic Light Deflector, which creates a stereoscopic 3D effect without the need for special glasses when showing specially prepared content. This solution uses 2nd generation Intel® Core™ i7 processors that have an on-chip graphics engine, thus eliminating the need for a discrete graphics card. Adding a new dimension for interactive and captivating digital signage, Auto-S3D technology enables advertisers and product manufacturers to engage customers like never before.

3D INTERNATIONAL

"This is the first time an on-chip graphics engine has enough performance to perform real-time 3D rendering."

– Alexander Schmidt
Managing Director and CTO
3D International Europe

Swipe, Flick & Tap on a Product Wheel

Making Point & Click "old school", the latest touchscreens perform Swipe, Flick & Tap, which is creating a more engaging experience. This technology is now being applied to vending machines, where customers can quickly learn more about the products and make informed decisions. For example, the proof-of-concept shown in Figure 1 allows customers to browse through sunglasses that are queued up on a spinning wheel. The wheel rotates on the display with a flick of a finger.

The vending machine plays 3D digital signage until someone wants to use the vending feature, at which point, the camera rotates the sunglasses wheel and the shopping process starts. There's a realistic, responsive feel since the sunglasses snap in and out of their slot as the wheel turns. The customer selects a particular pair of sunglasses just by touching its image, which starts an animated zoom into the glasses. After that, the customer can look at other glasses or initiate a purchase (sidebar on the next page), which triggers the vending mechanism. In this example, the background is a static image, but it could also be 2D or 3D video content.

Although the proof-of-concept merchandises sunglasses, it is based on a 3D application that supports any product visualization desired by vending machine operators. 3D International owns the intellectual property (IP) of the interactive 3D application, which Intel is authorized to distribute.

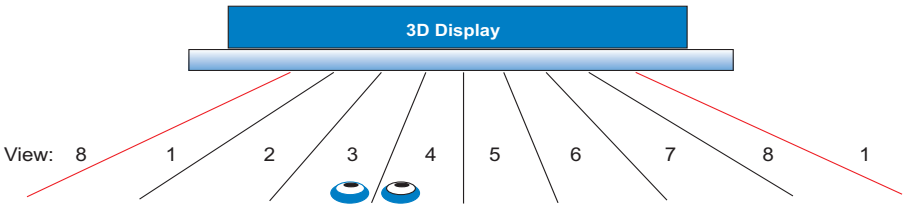

Figure 3. CLD Supports Up to Eight Perspective Views

Glasses-Free 3D Viewing

The vending machine proof-of-concept incorporates a 21.5 inch (54.6 cm) Auto-S3D display with a touch sensor manufactured by 3D International. The full high-definition LCD display produces an autostereoscopic experience that allows viewers to see 3D effects without any special glasses. This requires an interactive 3D application, which in this case also combines 2D and 3D video material along with a wide assortment of vivid, real-time rendered 3D objects.

A special optical filter, called Chromatic Light Deflector (CLD), attaches to the front of the display and creates an autostereoscopic effect. This filter contains a set of optical elements that distributes the light information from the LCD pixels into different directions. Using only two perspective views would result in a very limited viewing position on the 3D display. Therefore, the CLD technology generates between five and eight perspective views, as depicted in Figure 3, in order to provide many sweet spots when the display is viewed from different angles.

Compute Intensive

Compared to other types of content, interactive 3D is more compute intensive as it must be rendered "on the fly" instead of being pre-rendered, like a prerecorded video stream that can just be played. In order to provide a good interactive experience, the system needs to respond immediately and render content in real-time. The use of stereoscopic displays with multiple views further escalates graphics processing requirements – to about eight times that of earlier generation 3D displays when eight view perspectives are supported.

Previously, this high level of graphics processing required a discrete graphics card, but 3D International found the 2nd Generation Intel Core i7 processor was up to the task. This is because the processor integrates high-performance graphics and media processing right on the processor, a technology called Intel® HD Graphics 3000. The combination of this next generation graphics technology and Intel® multi-core technology supplies the computing performance needed to support multi-view video decoding. The Intel Core i7 processor easily delivers more than 30 frames per second (FPS), compared to 10-15 FPS from previous generation Intel® processors.

The processor has dedicated hardware that accelerates video decoding, independent of the graphics engine and other applications processing. Decoding video, such as MPEG-4 and H.264, can be done by the processor. These capabilities enable 3D International to combine pre-computed and real-time content rendering on the same screen, as in playing 2D/3D promotional videos in the background while customers interact with 3D animations in the foreground. By eliminating the discrete graphics card, this solution lowers cost, reduces power consumption, improves reliability and decreases the form factor.

3D INTERNATIONAL* OFFERINGS

3D International, previously named VisuMotion, supplies 3D hardware and software solutions. Vending equipment manufacturers can choose from a half dozen standard 3D stereoscopic displays, ranging from 8.4 to 65 inches in size. The VisuMotion Software Development Kit enables developers to integrate a 3D movie player into an existing application or create their own real-time 3D render engine. The VisuMotion z.l.i.c.e. 3D* is a professional video/image compositing and editing application specially designed for 3D multiview and two view stereo content.

Fascinate Your Customers

Adding exciting, interactive Auto-S3D digital signage to a vending machine can improve the customer experience, leading to increased sales and advertising effectiveness. The proof-of-concept, developed by Intel and 3D International, demonstrates how vending machine developers can integrate this capability quickly and cost-effectively.

For more information about 3D International products, please visit www.3di.com.my

For more information, please visit www.intel.com/go/ic

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