

<b>CLIENT</b>	Theodore P. Cummings, Esq. The Law Offices of Theodore P. Cummings, LLC 1600 Scripps Center 312 Walnut Street Cincinnati, OH 45202
<b>CASE</b>	2010-00378 DLP Digital Light Projector Retail Shelves
<b>REQUEST DATE</b>	April 7, 2010
<b>REQUEST</b>	Patent Search
<b>POINTS OF FOCUS</b>	<p>Publications or communications that describe, disclose or teach, in general, as stated in client's search request of April 7, 2010 the following...</p> <p>A system for displaying product information on store shelves includes a communications multi-network and a digital light projector (DLP). The DLP projects a full color and in-motion shelf display, which displays product information, prices, and promotions on store shelves. The information for display is transmitted through the communications multi-network and can be updated in real-time...</p> <p>Communications multi-network: at least one mesh communication network and at least one star communication network connected to a logic engine that organizes, routes and manages data to be communicated on the different communication networks that make up the multi-network....</p>
<b>RESULTS</b>	<p>This search located four (4) <a href="#">Tier One</a> patent references, three (3) <a href="#">Tier Two</a> patent references and three (3) <a href="#">Non-patent references</a> that either speak directly or indirectly to the points of focus of which the following may be of interest...</p> <p><a href="#">The Smart Bookshelf: A study of camera projector scene augmentation of an everyday environment</a></p> <p><a href="#">Pattie Maes: Unveiling game-changing wearable tech Sixth Sense Project</a></p>
<b>NOTES</b>	<ol style="list-style-type: none"><li>1. <i>Tier One references teach or speak to many of the elements listed in the points of focus and may touch on novelty.</i></li><li>2. <i>Tier Two references teach or speak to a few of the elements listed in the points of focus and, when combined, may touch on obviousness.</i></li><li>3. <i>Legal Status is <b>bold</b> and italicized if other than pending or active.</i></li></ol>
<b>DISCLAIMER</b>	<p><i>This search represents a thorough and continuous effort to locate the most appropriate references given the information provided by the client and the budget placed on this project. This is not a guarantee that every potential reference has been located. Furthermore, the information contained herein has been obtained from data sources believed to be reliable. Gilman Research Services, LLC disclaims all warranties as to the accuracy, completeness or adequacy of such information. No opinion, unless clearly stated, regarding freedom to operate, patentability or otherwise of the invention is expressed or implied other than the comments stated herein.</i></p>

**RESOURCES**

<b>PATENT LITERATURE</b>	
<i>USPTO</i>	US Full Text, US Published Patent Applications
<i>Class/Subclass</i>	<b>345/87-104, 204-205, 173-183; 178/18.09; 19.05; 349/2, 22, 175, 186, 20, 35, 115; 427/163.4</b>
<i>Lexis-Nexis</i>	US Full Text, US Published Patent Applications, PCT Applications, Abstracts of Japan
<i>Delphion</i>	US Full Text, US Published Patent Applications, PCT Applications, Abstracts of Japan
<b>NONPATENT LITERATURE</b>	
<i>Lexis-Nexis</i>	General News, Industry News, Encyclopedia of Associations, Company News, Information Week
<i>Dialog</i>	Dissertation Abstracts (35), Conference Paper Index (77), Inside Conferences (65), New Product Announcements (621)
<i>Internet Search Engines</i>	Google, Google Scholar, Google Books, Taeus, All The Web, Open Directory Project
<i>e-Resources</i>	IBM Technical Disclosure Bulletin, IP.com, Research Disclosure, Social Science Research Network Electronic Library, IEEE Xplore, Internet Archive's – Wayback Machine, ACM Digital Library, Cite Seer. IST Scientific Literature Digital Library, MIT Technology Review, Geek.com, HalfBakery.com, Shouldexist.com, SlashDot, IE-Compendex Plus, Technology Review, Advanced Imaging, Chain Store Age
<i>Usenet Newsgroups, Forums, BLOGS</i>	Google Newsgroups, Yahoo Groups, Eng-Tips Forum
<i>Company Sites</i>	IBM, NCR
<i>Inventors, Individuals of Interest</i>	Not Applicable
<i>Trade Groups, Assoc. &amp; Conferences (Online)</i>	Journal of Marketing, British Food Journal
<i>Academia, Journals (Online)</i>	Journal of the Academy of Marketing Science
<i>Hand Library Search, Hardcopy Text</i>	Not Applicable

**SEARCH STRATEGY**

<b>SEARCH TERMS</b>	Digital light projector	Digital light process	HUD
	Mobile Augmented Reality Applications (MARA)	Retail	Shelf
	Display	Product	Description
	Price	Information	Network
	Communicate		
<b>SEARCH STRINGS</b>	(digital light projector) and (product w/s (information or price or description))	(digital light projector) and retail and shelf and product and information	("digital light" w/5 (proces! or project!)) and (retail w/s (shelf or display or product or price or descrip!))

**Patent References - Tier One**

**[US7286111B2](#) 2007-10-23 Apparatus for electro-optically writing a display (en)**

Inventors: Stanley W. Stephenson, III, Spencerport, NEW YORK, United States of America  
Applicants/Assignees: Eastman Kodak Company, Rochester, NEW YORK, United States of America  
Application/Filing Date:  
2003-11-13

English Abstract:

A display writer for writing on a light writable display of the type having a layer of cholesteric liquid crystal material disposed between two conductors, the cholesteric liquid crystal material having multiple stable optical states at zero electrical field; and a light absorber for forming an image wise thermal pattern in the cholesteric liquid crystal sufficient to change the optical state of the cholesteric liquid crystal in response to an image wise pattern of light, the display writer including a flash lamp; a reflective light modulator for modulating light from the flash lamp an image wise pattern; optics for directing the image wise modulated light onto the light writable display; and means for applying an electrical field to the conductors of the display in conjunction with activation of the flash lamp.

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**[WO2009094043A1](#) 2009-07-30 METHODS AND SYSTEMS FOR DISPLAYING MESSAGES IN A WIDE-SPECTRUM DISPLAY (en)**

Inventors: DICKIE, Connor, 790 Clearview Cr., London, Ontario, N6H 4P7, Canada;  
SHELL, Jeffrey, 129 Patton Pl. SW, Calgary, AB, T2V 5E1, Canada  
Applicants/Assignees: KAMERAFLAGE INC., 791 Tremont Street, Unit W515, Boston, MA 02188, 02188, United States of America;  
DICKIE, Connor, 790 Clearview Cr., London, Ontario, N6H 4P7, Canada;  
SHELL, Jeffrey, 129 Patton Pl. SW, Calgary, AB, T2V 5E1, Canada  
Application/Filing Date:  
2008-07-03

English Abstract:

A method and system for displaying messages in a wide-spectrum display includes a visible element comprising a first portion of a message and an invisible element comprising a second portion of the message. In one aspect, the method includes the step of displaying, in the visible element, e.g. an image from a film, a captured photograph or a first part of an advertisement. The step of displaying, in the invisible element, includes the displaying e.g. of subtitles, metadata or a second part of an advertisement. An individual may choose to view the invisible element by viewing the wide spectrum display through a wavelength conversion device. Also disclosed are the use of the display in games, and of its integration in wearable material.

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**[US20100014593A1](#) 2010-01-21 METHOD AND SYSTEM OF DETECTING SIGNAL PRESENCE FROM A VIDEO SIGNAL PRESENTED ON A DIGITAL DISPLAY DEVICE (en)**

Inventors: James G. Withers, Chesterfield, MISSOURI, United States of America;  
Yousri H. Barsoum, St. Louis, MISSOURI, United States of America;  
Edward J. Koplak, St. Louis, MISSOURI, United States of America;  
Michael C. Reynolds, Ballwin, MISSOURI, United States of America  
Application/Filing Date:  
2009-09-24

English Abstract:

A system for transmitting a modulated video signal to be presented on a digital display device, the video signal having a first frame and a second frame, the first frame and the second frame each comprised of a plurality of pixels, the system comprising a signal source for generating a video signal, an encoder, the encoder comprising a means for receiving the video signal from the signal source, a means for selectively altering luminance of the pixels of the first frame and the second frame of the video signal to represent a signal presence or signal absence and thereby creating a modulated video signal, and a means for providing the modulated video signal to a broadcast source, and the broadcast source for providing the modulated video signal from the encoder to a digital display device.

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**[US20050155070A1](#) 2005-07-14 Apparatus for and a method of sending and displaying images and data (en)**

Inventors: Paul Slaughter, Ashington, United Kingdom of Great Britain and Northern Ireland  
Applicants/Assignees: SLAUGHTER PAUL  
Application/Filing Date:  
2002-12-12

English Abstract:

Apparatus and method for sending and displaying images and data includes a first computer and a second computer coupled to the first computer via a telecommunications network. Images and data are sent from the first computer to the second computer (and optionally to a third computer) for display using a digital display device. This invention also relates to a method of displaying data on a screen (e.g., a cinema screen).

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**Patent References - Tier Two**

[US6424998B2](#) 2002-07-23 System permitting the display of video or still image content on selected displays of an electronic display network according to customer dictates (en)

Inventors: Charles Eric Hunter, Hilton Head Island, United States of America  
Applicants/Assignees: World Theatre, Inc. , Morrisville, United States of America  
Application/Filing Date:  
1999-05-18

English Abstract:  
Commercial advertisers, such as consumer product companies and the advertising agents that represent them, directly access a network of thousands of large, high resolution electronic displays located in high traffic areas and directly send their own advertisements electronically to the network to be displayed at locations and times selected by the advertisers. In another application, operators of digital movie theaters have ongoing, continuous access to tens of thousands of movies that can be ordered in digital form for display on selected screens at their theaters at selected times.

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[US6430603B2](#) 2002-08-06 System for direct placement of commercial advertising, public service announcements and other content on electronic billboard displays (en)

Inventors: Charles Eric Hunter, Hilton Head Island, United States of America  
Applicants/Assignees: World Theatre, Inc. , Morrisville, United States of America  
Application/Filing Date:  
1999-04-28

English Abstract:  
Commercial advertisers, such as consumer product companies and the advertising agents that represent them, directly access a network of thousands of large, high resolution electronic displays located in high traffic areas and directly send their own advertisements electronically to the network to be displayed at locations and times selected by the advertisers.

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[US6430605B2](#) 2002-08-06 System permitting retail stores to place advertisements on roadside electronic billboard displays that tie into point of purchase displays at stores (en)

Inventors: Charles Eric Hunter, Hilton Head Island, United States of America  
Applicants/Assignees: World Theatre, Inc. , Morrisville, United States of America  
Application/Filing Date:  
1999-10-12

English Abstract:  
Commercial advertisers, such as a chain of retail stores, directly access a network of thousands of large, high resolution

roadside electronic displays and directly send their own advertisements electronically to the network to be displayed at locations and times selected by the advertisers, while tying the advertising content into the content of point of purchase displays in the advertiser's store(s).

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## Non-patent References

### [ShelfTorchlight: Augmenting a Shelf using a Camera Projector Unit](#)

Markus Löchtefeld, Sven Gehring, Johannes Schöning, Antonio Krüger  
German Research Center for Artificial Intelligence (DFKI)  
Stuhlsatzenhausweg 3  
Saarbrücken, Germany  
{markus.loechtefeld, sven.gehring, schoening, krueger}@dfki.de

#### ABSTRACT

The search for a certain book in a library that contains many books can be a time-consuming task. Even if one finds the right shelf, one still has to browse an often huge area in the shelf. The same problem occurs when searching for a specific product in a supermarket shelf that fits one personal preferences (e.g. a allergic or diet profile). With Shelf-Torchlight we present a prototype that aims to overcome the problems when searching for a book or a product in a shelf using a mobile camera projector unit. In addition we show the advantages of semantic zooms when projecting information into these shelves. With the miniaturization of mobile projectors, also called pico projectors, the integration of these projectors into mobile phones is now possible. These phones allow a variety of new applications evolving from the ability to expand the interaction space of the phone to the environment. The prototype described in this paper, Shelf-Torchlight, is such an application, trying to demonstrate the interaction possibilities of these new devices. A user can highlight the object she is looking for in the shelf and get additional information

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### [The Smart Bookshelf: A study of camera projector scene augmentation of an everyday environment](#)

Craato, D. and Kale, A. and Jaynes, C.  
Seventh IEEE Workshops on Application of Computer Vision, 2005. WACV/MOTIONS'05 Volume 1  
volume=1  
year=2005

#### Abstract

Recent research in projector-camera systems has overcome many of the obstacles to deploying and using intelligent displays for a wide range of applications. In parallel with these developments, projector costs continue to decline with corresponding increase in resolution, brightness and contrast ratio. In light of this trend, we are exploring the unique capabilities that camera-projector systems can offer to intelligent environments and ubiquitous computing.

Our initial step towards environments that are intelligently augmented by projector-camera devices, is a smart bookshelf application. The system utilizes a camera pair and a projector to monitor the state of a real world library shelf. As books are added to the shelf a foreground detection algorithm which takes into account the projected information yields new pixels in each view that are then verified using a planar parallax constraint across both cameras to yield the book spine. Using a simple calibration scheme, the homography induced by the world plane in which book spines approximately lie is estimated. Users are then able to query for the presence of a book through a user interface and book spines are highlighted by transforming image pixels to their corresponding points in the projector's frame via the known homography. The system also can display the state

of the bookshelf at any time in the past. Projected information can also be used to enhance the image-processing tasks at hand and we briefly explore this in this work.

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### [Pattie Maes: Unveiling game-changing wearable tech Sixth Sense Project](#)

<http://www.pranavmistry.com/projects/sixthsense/>

The SixthSense prototype is comprised of a pocket projector, a mirror and a camera. The hardware components are coupled in a pendant like mobile wearable device. Both the projector and the camera are connected to the mobile computing device in the user's pocket. The projector projects visual information enabling surfaces, walls and physical objects around us to be used as interfaces; while the camera recognizes and tracks user's hand gestures and physical objects using computer-vision based techniques. The software program processes the video stream data captured by the camera and tracks the locations of the colored markers (visual tracking fiducials) at the tip of the user's fingers using simple computer-vision techniques. The movements and arrangements of these fiducials are interpreted into gestures that act as interaction instructions for the projected application interfaces. The maximum number of tracked fingers is only constrained by the number of unique fiducials, thus SixthSense also supports multi-touch and multi-user interaction.

#### Video Link

[http://www.youtube.com/watch?v=nZ-VjUKAsao&feature=player\\_embedded#](http://www.youtube.com/watch?v=nZ-VjUKAsao&feature=player_embedded#)

TEDtalksDirector — March 10, 2009 — <http://www.ted.com>  
This demo -- from Pattie Maes' lab at MIT, spearheaded by Pranav Mistry -- was the buzz of TED. It's a wearable device with a projector that paves the way for profound interaction with our environment. Imagine "Minority Report" and then some.

#### Notes...

5:15 min. point In Maes' TED presentation, retail examples are presented.

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