VENABLE, BAETJER, HOWARD & CIVILETTI, LLP
Including professional corporations

1201 New York Avenue, N.W., Suite 1000
Washington, D.C 20005-3917
(202) 962-4800, Fax (202) 962-8300
www.venable.com

OFFICES IN

WASHINGTON, D.C.
MARYLAND
VIRGINIA

VENABLE
ATTORNEYS AT LAW

October 24, 2000

Assistant Commissioner for Patents
Washington, D.C. 20231
ATTENTION: Box PATENT APPLICATION

Attorney Docket No.: 37112-164994

Sir:

Submitted herewith is a patent application under 37 C.F.R. § 1.53(b) for:

Inventor: ALAN J. LIPTON
Title: INTERACTIVE VIDEO MANIPULATION

This is not a Provisional Application.

The application includes:

X Specification (39 pages), which includes claims (1-58) and an Abstract (1 page)
X Formal drawings (8 sheets, Figures 1-8)

In view of the above, it is requested that this application be accorded a filing date.

Please address all communications to:

VENABLE
Post Office Box 34385
Washington, D.C. 20043-9998
Telephone: (202) 962-4800
Facsimile: (202) 962-8300

Respectfully submitted,

Michael A. Sartori, Ph.D.
Registration No. 41,289

MAS/rl
DC2-247199

APPLICATION FOR UNITED STATES PATENT

INVENTOR: ALAN J. LIPTON

TITLE: INTERACTIVE VIDEO MANIPULATION

ATTORNEYS' ADDRESS:

VENABLE
1201 New York Avenue, N. W. , Suite 1000
Washington, D. C. 20005-3917
Telephone: (202) 962-4800
Telefax: (202) 962-8300

ADDRESS FOR U.S.P.T.O. CORRESPONDENCE:

VENABLE
Post Office Box 34385
Washington, D. C. 20043-9998

ATTORNEY DOCKET NO. :

37112-164994

INTERACTIVE VIDEO MANIPULATION

BACKGROUND OF THE INVENTION

Field of the Invention

A system in the field of video processing is disclosed. More specifically, techniques are disclosed for interacting with and manipulating video streams for applications, such as entertainment, education, video post-production, gaming, and others.

References

For the convenience of the reader, the references referred to herein are listed below. In the specification, the numerals within brackets refer to respective references. The listed references are incorporated herein by reference.

[1] H. Fujiyoshi and A. Lipton, "Real-Time Human Motion Analysis by Image Skeletonization," Proceedings of IEEE WACV '98, Princeton, NJ, 1998, pp. 15-21.

[2] A. Lipton, H. Fujiyoshi and R. S. Patil, "Moving Target Detection and Classification from Real-Time Video," Proceedings of IEEE WACV '98, Princeton, NJ, 1998, pp. 8-14.

[3] A. J. Lipton, "Local Application of Optic Flow to Analyse Rigid Versus Non-Rigid Motion," International Conference on Computer Vision, Corfu, Greece, September 1999.

[4] A. Selinger and L. Wixson, "Classifying Moving Objects as Rigid or Non-Rigid Without Correspondences," Proceedings of DARPA Image Understanding Workshop, 1, November 1998, pp. 341-58.

Background of the Invention

In augmented reality, which is a research topic in the computer vision community, video imagery is augmented by accurately registered computer graphics. Computerized x-ray vision and video assisted surgery are two examples of augmented reality. One of the long-time goals of computer vision community is to analyze and interact directly with real-time video-derived data.

One of the long-time goals of the entertainment industry, such as the movie industry and the computer gaming industry, is the creation of realism. To achieve this, the movie industry invested in computer graphics to create realistic false images. Additionally, the computer gaming industry integrates photo-realistic still imagery and video to enhance a user's experience. To date, this integration is largely non-interactive using only "canned" video sequences to achieve little more than setting atmosphere.

Examples of the early use of imagery in games include still images or canned video sequences as a backdrop to the action, with computer generated characters overlaid on top, rather than truly interacting with the action. A slightly more interactive use of video is displayed in more recent games, such as Return to Zork™ and Myst™, in which short, relevant video sequences provide the player with timely information or atmosphere. The most interactive use of video has been in video-disc based games, like Dragon's Lair™, in which the game itself is made up of small image sequences, each containing a small problem or challenge. Based on the player's choice, the next appropriate video sequence is selected to provide the next challenge exploiting the fast random access time available to the videodisc medium.

There has been some effort made to use video interactively, most notably as an input device. There exist companies that produce games based on chroma key screen technology. Real players are inserted into a virtual environment to perform simple actions like tending a

virtual soccer goal or shooting virtual baskets. These games require considerable infrastructure. The player must wear distinguishing clothing, for example, green gloves, so that the computer recognizes body parts, and the game is played in front of a large blue screen stage. More modest applications of this type that run on desktop computers include, for example, SGI's Lumbus™, in which the IndyCam is used for simple head or hand tracking to control a plant-like creature called a "Lumbus" in three-dimensional (3D) space.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a system and techniques to accomplish real-time and non-real time interactive video manipulation.

It is a further object of the invention to provide a system and techniques to apply interactive video processing to applications such as entertainment, simulation, video editing, and teleconferencing.

These and other objects are achieved by the invention, which is embodied as a method, a system, an apparatus, and an article of manufacture.

The invention includes a method comprising the steps of: extracting an object of interest from a video stream; analyzing said object from said video stream to obtain an analyzed object; manipulating said analyzed object to obtain a synthetic character; and assembling a virtual video using said synthetic character. The method further comprises the step of tracking said object. The step of assembling comprises the step of inserting the synthetic character into said video stream. The step of assembling comprises removing said synthetic character from said video stream. The method further comprises the step of determining functional areas within said video stream.

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.