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(54) **VIDEO ANALYSIS TOOL FOR SPORTS INSTRUCTION**

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(57) **ABSTRACT**

A method for providing instruction to a student in golf or other sports is provided. In accordance with the method, a video file is received of the student practicing the sport. The video is then assembled into an executable viewer file accessible on a web site, and the student is notified when the viewer file is available on the web site.

FIG. 1

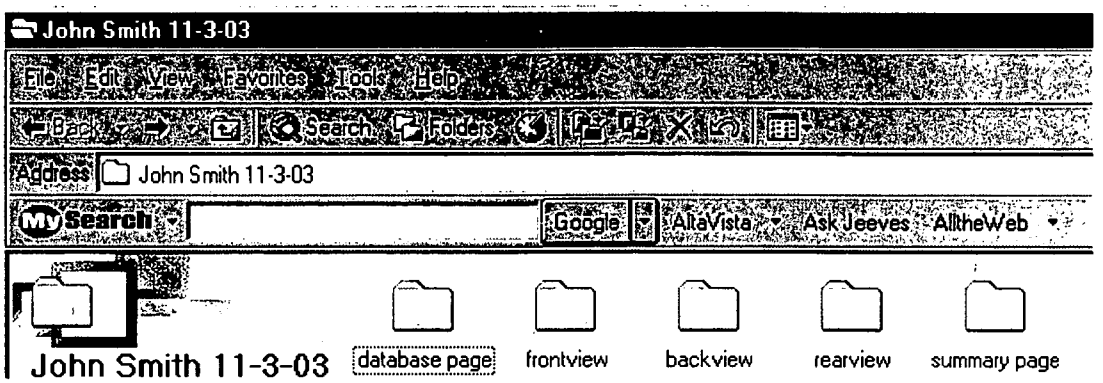

FIG. 2

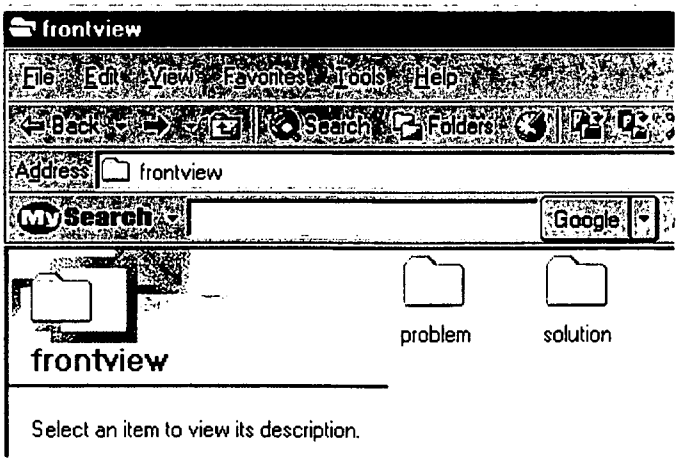

FIG. 3

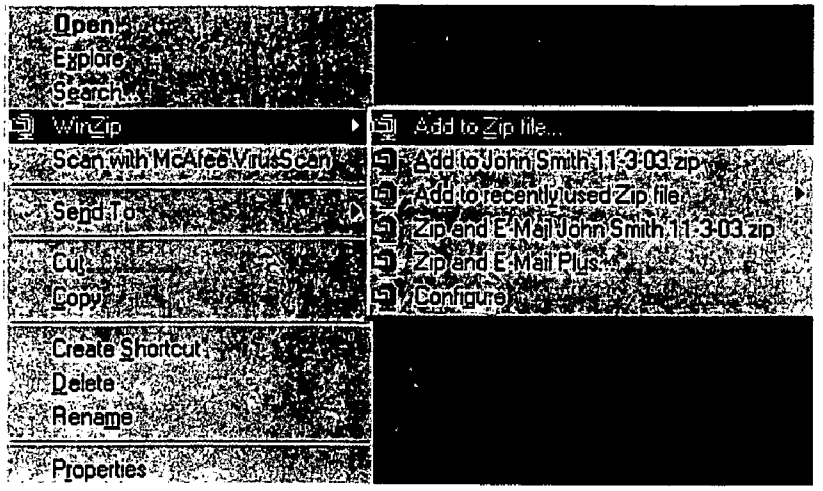
Open
Explore
Search...
WinZip
Scan with McAfee VirusScan
Send To
Cut
Copy
Create Shortcut
Delete
Rename
Properties
Add to Zip file...
Add to John Smith 11-3-03.zip
Add to recently used Zip file...
Zip and E-Mail John Smith 11-3-03.zip
Zip and E-Mail Plus...
Configure

FIG. 4

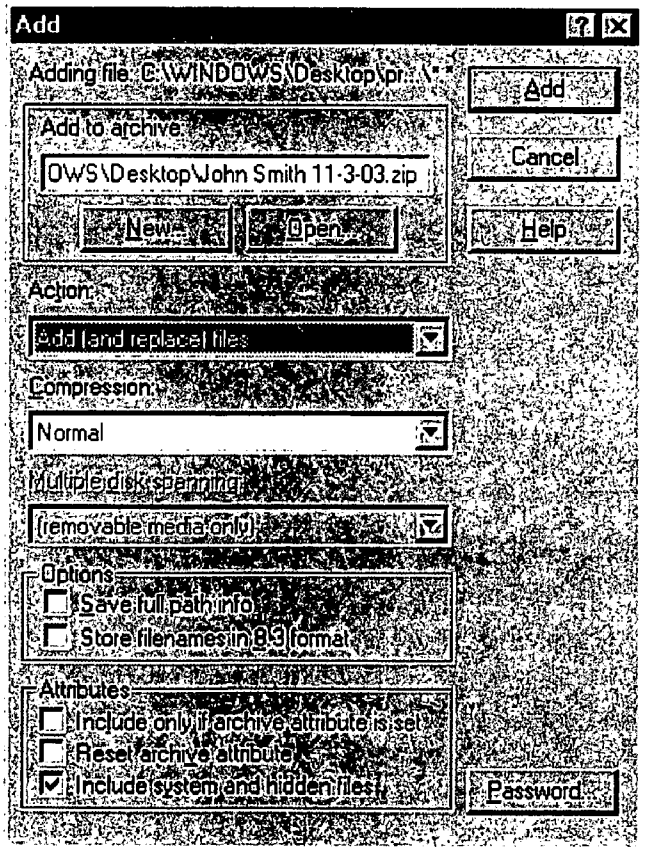
Add
Adding file: C:\WINDOWS\Desktop\pr
Add
Add to archive:
OWS\Desktop\John Smith 11-3-03.zip
Cancel
New...
Open...
Help
Action:
Add (and replace) files
Compression:
Normal
Multiple disk spanning:
(removable media only)
Options
Save full path info
Store filenames in 8.3 format
Attributes
Include only if archive attribute is set
Reset archive attribute
Include system and hidden files
Password...

FIG. 5


John Smith
11-3-03

FIG. 6

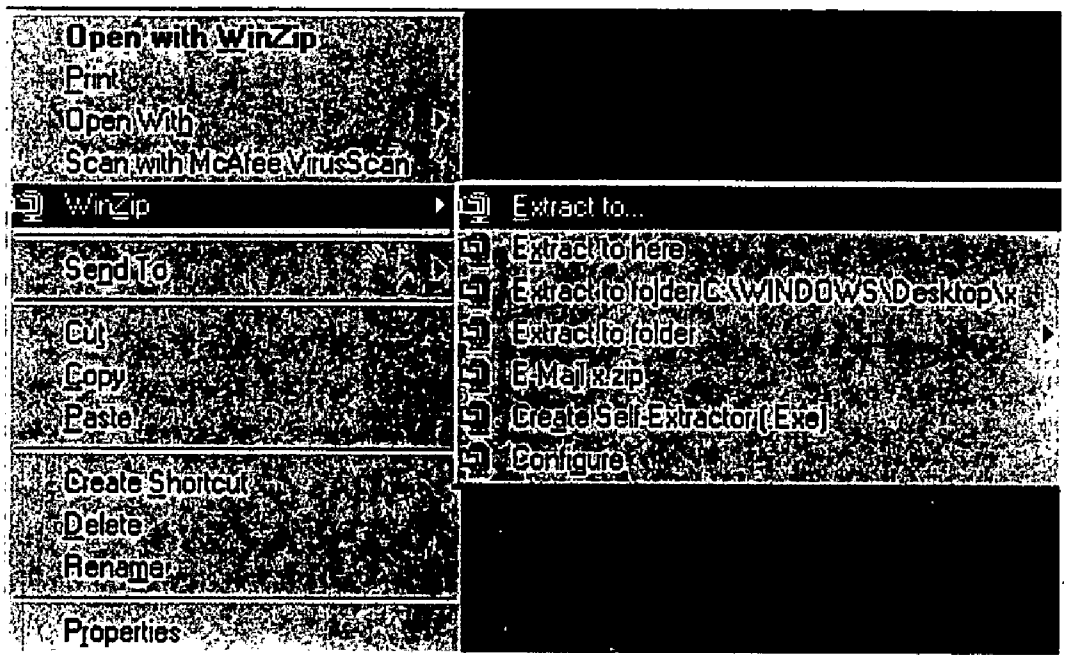
Open with WinZip
Print
Open With
Scan with McAfee VirusScan
WinZip
Send To
Cut
Copy
Paste
Create Shortcut
Delete
Rename
Properties
Extract to...
Extract to here
Extract to folder C:\WINDOWS\Desktop\
Extract to folder
E-Mail as zip
Create Self-Extractor (.Exe)
Configure

FIG. 7

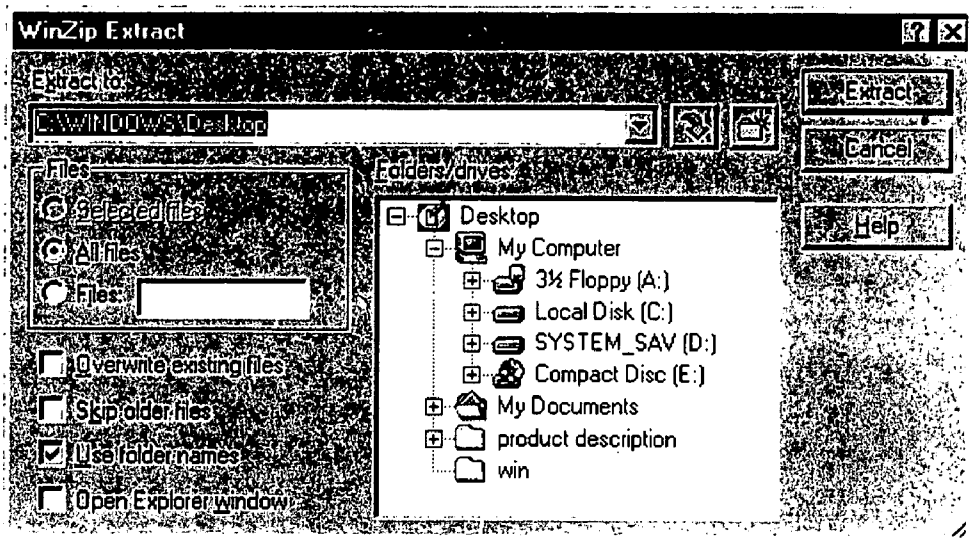
WinZip Extract
Extract to:
C:\WINDOWS\Desktop
Extract
Cancel
Help
Files
Selected files
All files
Files:
Overwrite existing files
Skip older files
Use folder names
Open Explorer window
Folders/drives
Desktop
My Computer
3½ Floppy (A:)
Local Disk (C:)
SYSTEM_SAV (D:)
Compact Disc (E:)
My Documents
product description
win

FIG. 8

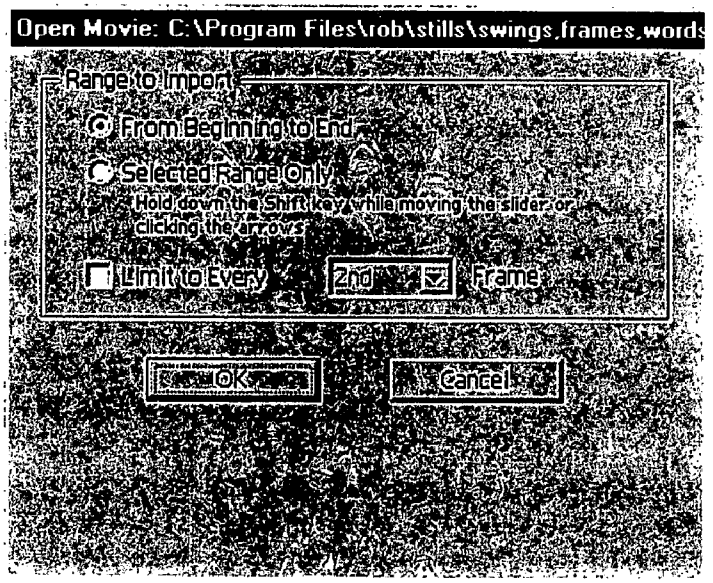
Open Movie: C:\Program Files\rob\stills\swings.frames.words
Range to Import
From Beginning to End
Selected Range Only
Hold down the Shift key while moving the slider or clicking the arrows
Limit to Every
2nd
Frame
OK
Cancel

FIG. 9

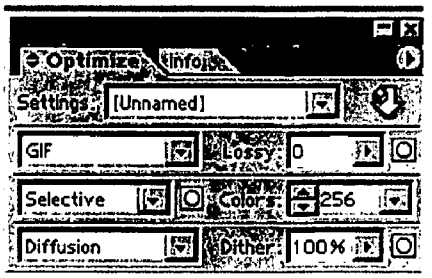
Optimize
Settings:
[Unnamed]
GIF
Lossy:
0
Selective
Colors:
256
Diffusion
Dither:
100%

FIG. 10

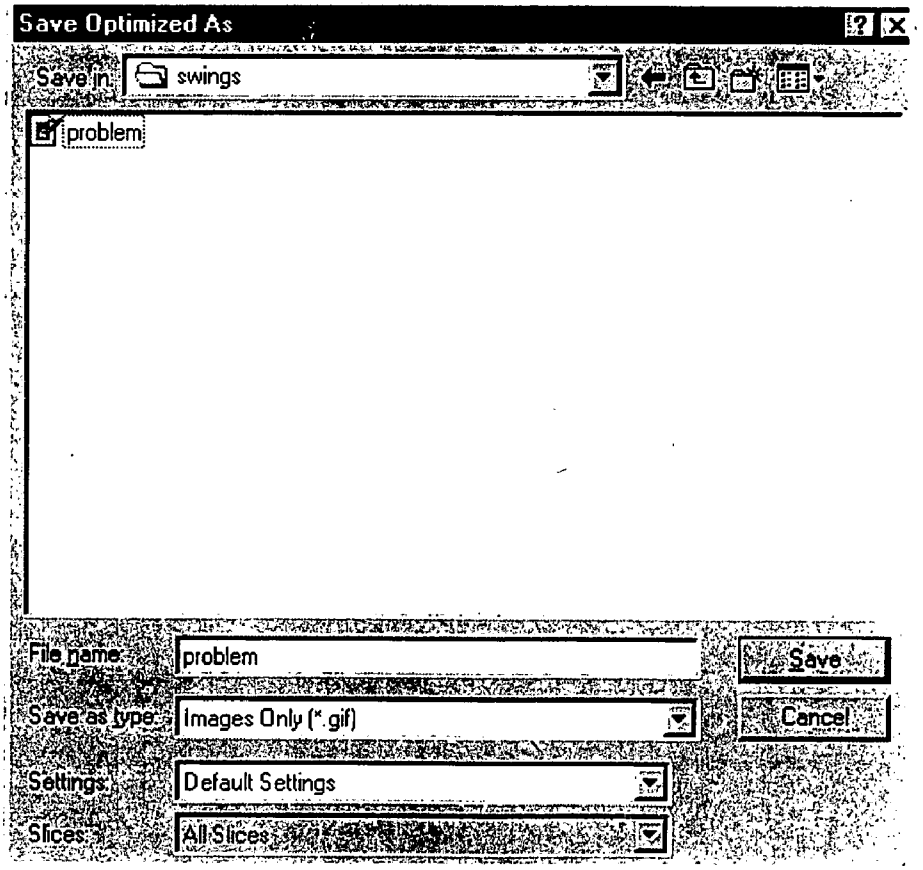
Save Optimized As
Save in:
swings
problem
File name:
problem
Save
Save as type:
Images Only (*.gif)
Cancel
Settings:
Default Settings
Slices:
All Slices

FIG. 11

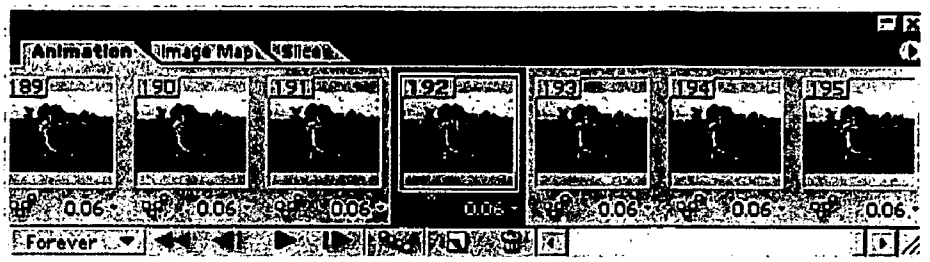
Animation
Image Map
Slices
189
190
191
192
193
194
195
0.06
Forever

FIG. 12

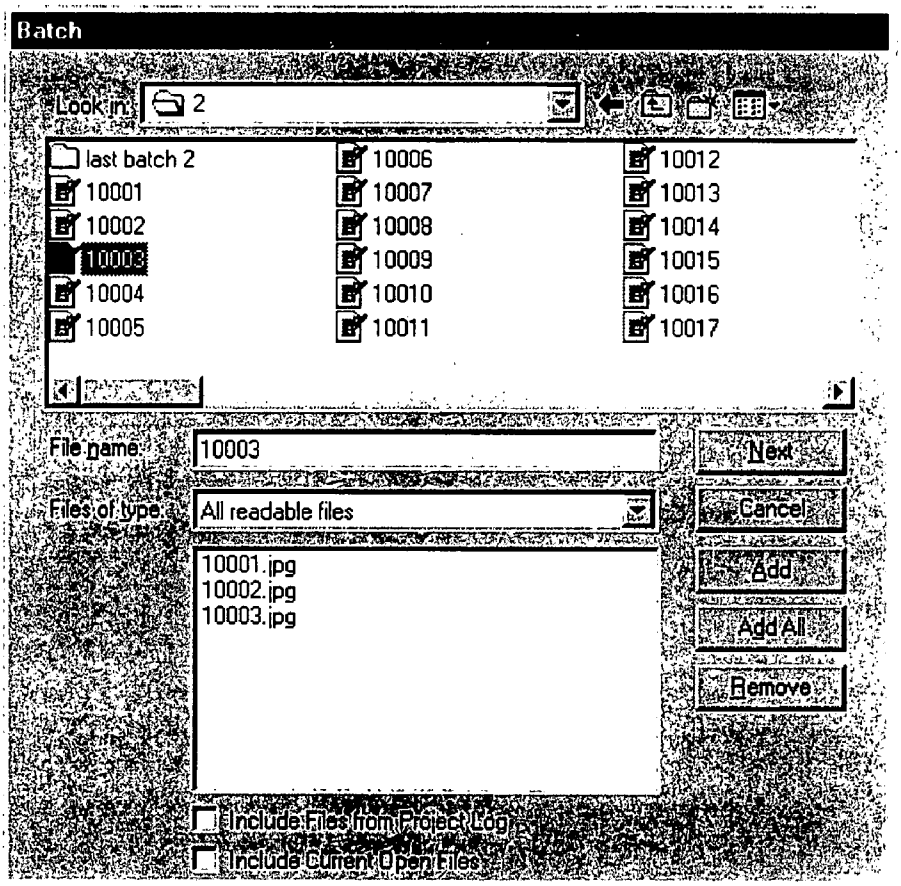
Batch
Look in:
2
last batch 2
10001
10002
10003
10004
10005
10006
10007
10008
10009
10010
10011
10012
10013
10014
10015
10016
10017
File name:
10003
Files of type:
All readable files
10001.jpg
10002.jpg
10003.jpg
Next
Cancel
Add
Add All
Remove
Include Files from Project Log
Include Current Open Files

FIG. 13

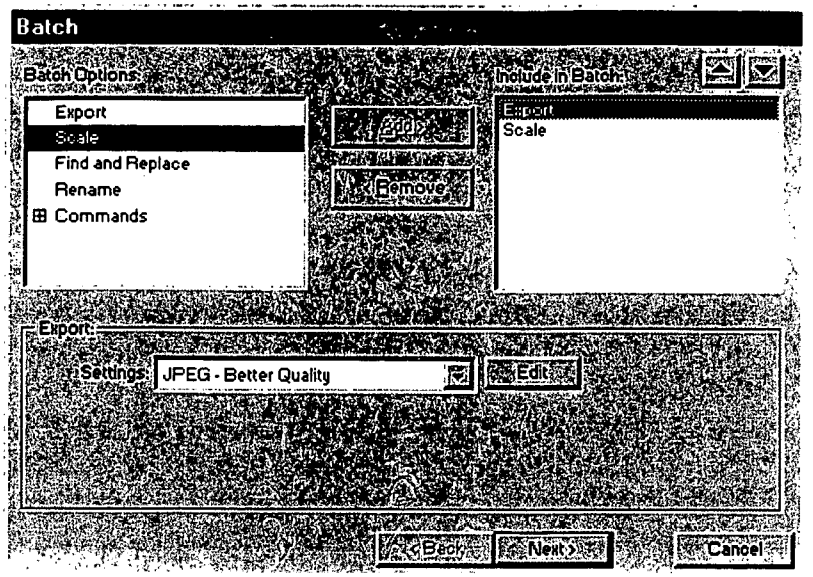
Batch
Batch Options:
Export
Scale
Find and Replace
Rename
Commands
Add >
< Remove
Include in Batch:
Export
Scale
Export:
Settings:
JPEG - Better Quality
Edit...
< Back
Next >
Cancel

FIG. 14

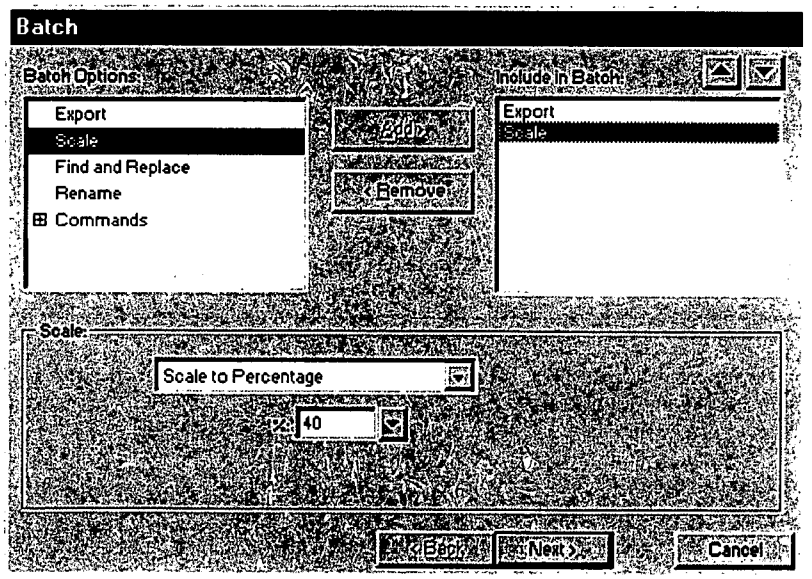
Batch
Batch Options:
Export
Scale
Find and Replace
Rename
Commands
Add >
< Remove
Include in Batch:
Export
Scale
Scale:
Scale to Percentage
40
< Back
Next >
Cancel

FIG. 15

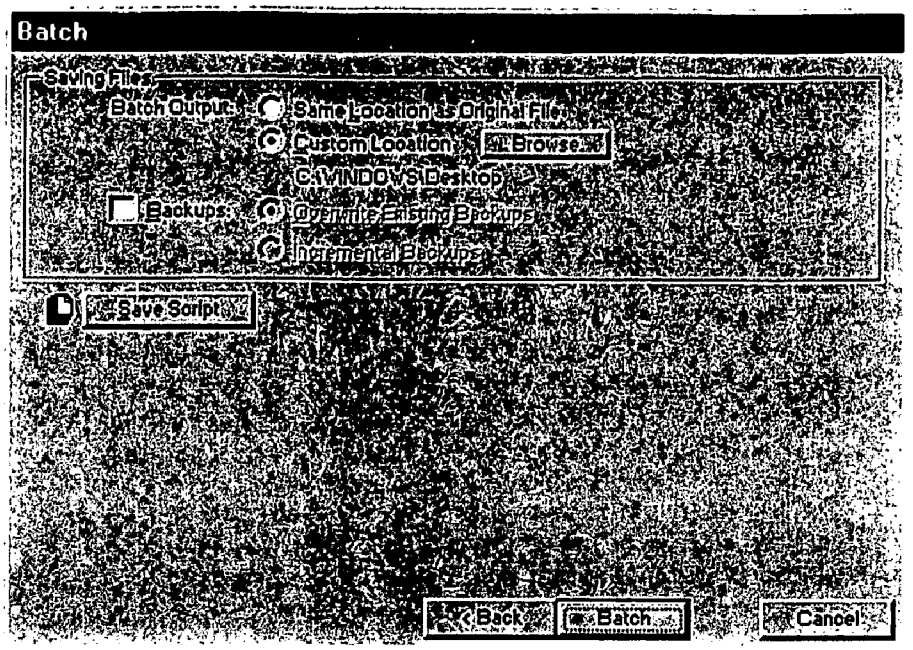
Batch
Saving Files
Batch Output:
Same Location as Original Files
Custom Location:
Browse...
C:\WINDOWS\Desktop
Backups:
Overwrite Existing Backups
Incremental Backups
Save Script...
< Back
Batch...
Cancel

FIG. 16

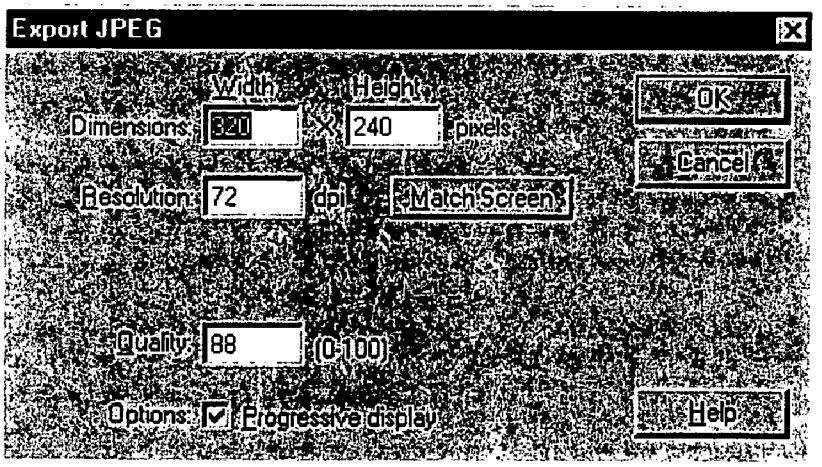
Export JPEG
Width
Height
Dimensions:
320
240
pixels
OK
Cancel
Resolution:
72
dpi
Match Screen
Quality:
88
(0-100)
Options:
Progressive display
Help

FIG. 17

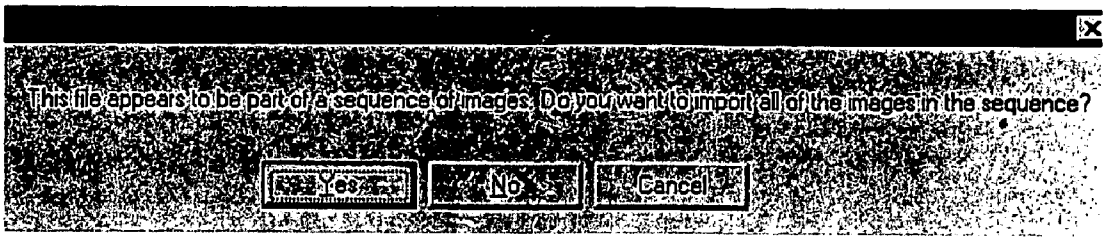

FIG. 18

FIG. 19

FIG. 20

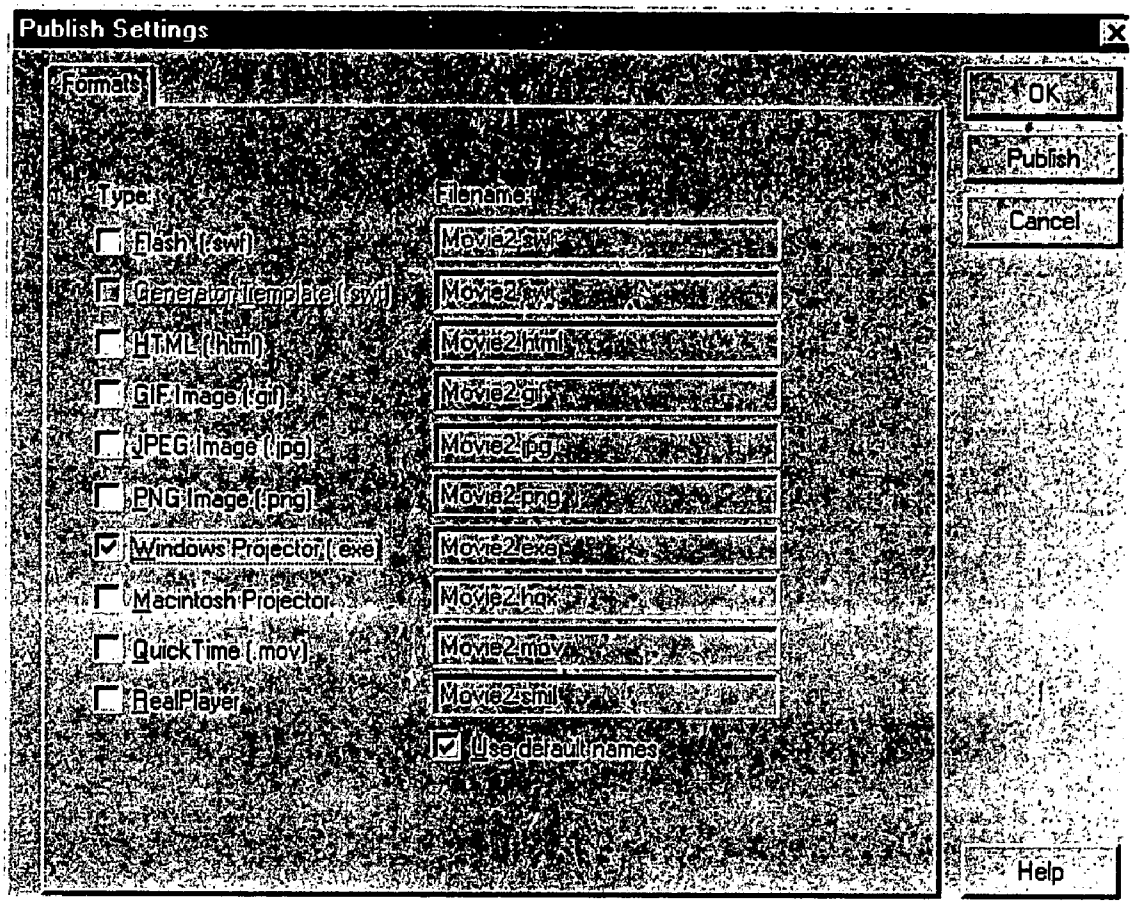
Publish Settings
Formats
Type:
Filename:
Flash (.swf)
Movie2.swf
Generator Template (.swf)
Movie2.swt
HTML (.html)
Movie2.html
GIF Image (.gif)
Movie2.gif
JPEG Image (.jpg)
Movie2.jpg
PNG Image (.png)
Movie2.png
Windows Projector (.exe)
Movie2.exe
Macintosh Projector
Movie2.hqx
QuickTime (.mov)
Movie2.mov
RealPlayer
Movie2.smil
Use default names
OK
Publish
Cancel
Help

FIG. 21

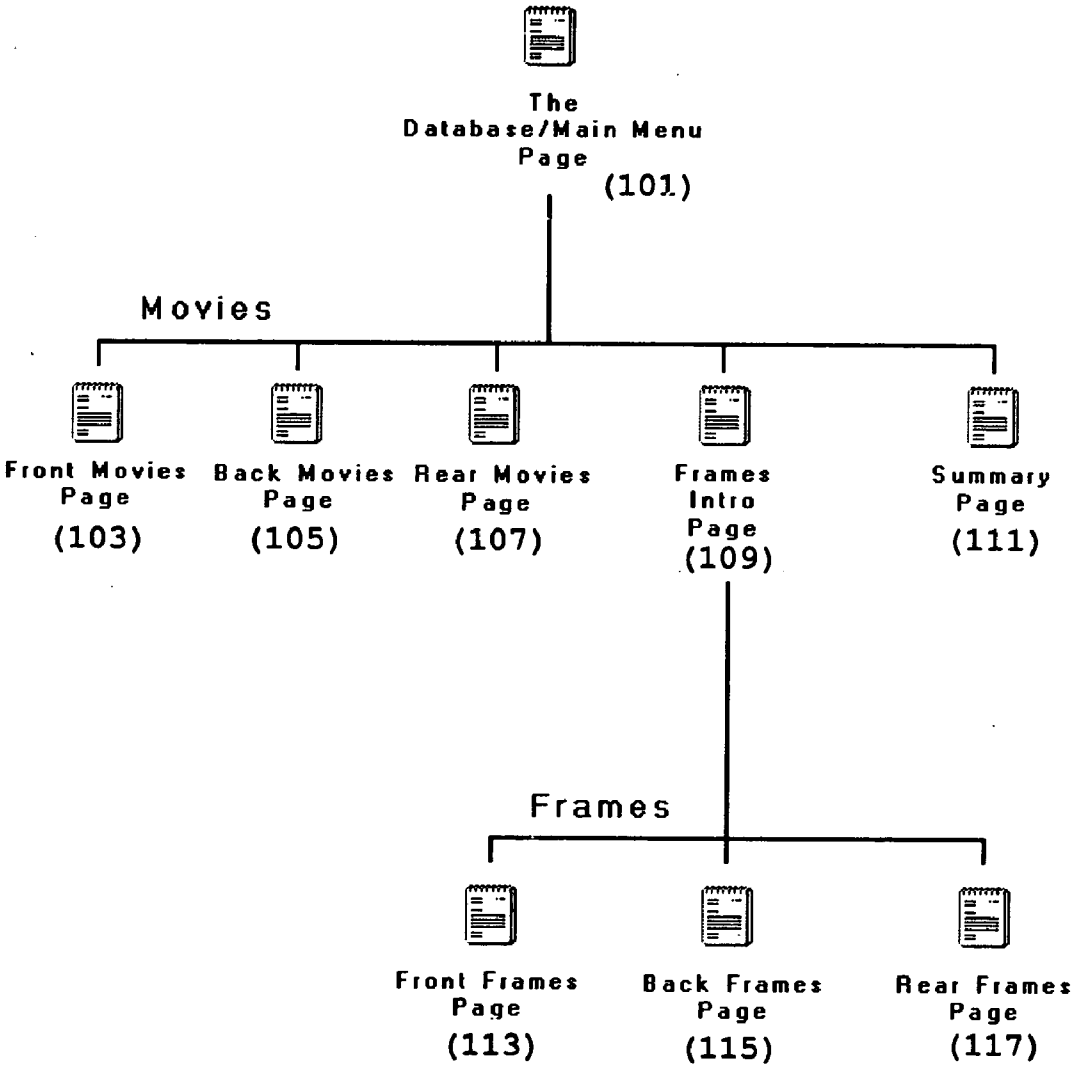
The Database/Main Menu Page (101)
Movies
Front Movies Page (103)
Back Movies Page (105)
Rear Movies Page (107)
Frames Intro Page (109)
Summary Page (111)
Frames
Front Frames Page (113)
Back Frames Page (115)
Rear Frames Page (117)

FIG. 22

VIDEO ANALYSIS TOOL FOR SPORTS INSTRUCTION

RELATED APPLICATIONS

[0001] This application claims priority from U.S. Provisional Application Ser. No. 60/520,167, which was filed on Nov. 14, 2003, and which is incorporated herein by reference in its entirety.

TECHNICAL FIELD OF THE INVENTION

[0002] The present invention pertains generally to sports instruction, and more particularly to video analysis used in such instruction.

BACKGROUND OF THE INVENTION

[0003] Today, more people play golf than any other outdoor sport. In fact, more than **16** million people play golf every year in the United States alone. The popularity of golf is further attested to by the large number of professional golf tournaments that are played every year, and by the extensive media coverage of those tournaments.

[0004] Unfortunately, most golfers experience a significant learning curve in becoming competent at the game. In light of the popularity of golf as a sport, this has resulted in a significant demand for golf training.

[0005] Over the course of time, many different techniques have been developed in order to teach the proper mechanics of swinging a golf club. The patent literature is replete with various devices and methodologies directed to this end.

[0006] Recently, video analysis has emerged as a popular tool for instructors to teach their students how to properly swing a golf club. In such an approach, the student's golf swing is captured by a camcorder or other video-recording device. The instructor replays the recorded video to illustrate the student's golf swing, and provides appropriate feedback. Such feedback may include the identification of problems associated with the student's swing and suggestions for correcting those problems, compliments regarding improvement in the student's swing, and other appropriate verbal instruction. Video analysis enables a golfer to view the mechanics of his personal golf swing, while simultaneously receiving feedback from an instructor. This approach has been recognized in the art as a valuable instructional tool.

[0007] Unfortunately, current implementations of video analysis have a number of shortcomings. For example, although video analysis is undoubtedly a useful tool during instruction, it would also be a useful resource to have available to a student for reference at a later date. In particular, a golfer may wish to refer to the analysis shortly before or after the next game that the golfer plays, or whenever a chronic problem reoccurs.

[0008] In recognition of this need, some instructors have undertaken the practice of making video tapes of their students, analyzing the tapes, and then forwarding the tapes with instructional comments to their students via mail. While this approach addresses the above noted need to some extent, it has some unsatisfactory aspects. In particular, there is an inherent delay in this type of approach due to the need to mail the tape. This is especially so if the student lives in a different country than the instructor. Also, video tape standards differ from one country to another, so the instructor must take care to make sure that the tapes are recorded in a format that can be played on the student's video tape player. Perhaps most importantly, however, this approach does not work well for students who travel frequently and who may not have access to a tape player during their travel. Given the popularity of golf among working professionals and the fact that such golfers may wish to review their lessons while they are away from home, this is a significant impediment to the use of this technology.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following description taken in conjunction with the accompanying drawings in which like reference numerals indicate like features and wherein:

[0010] **FIG. 1** is an illustration of the icon for an electronic file folder which demonstrates a file naming protocol for the main folder that may be used in the methodologies described herein;

[0011] **FIG. 2** is an illustration of a portion of an electronic desktop which demonstrates a file naming protocol for the main subfolder that may be used in the methodologies described herein;

[0012] **FIG. 3** is an illustration of a portion of an electronic desktop showing the problem and solution subfolders contained in the frontview, backview and rearview subfolders of **FIG. 2**;

[0013] **FIG. 4** is an illustration of a menu command in software that may be used to compress the main folder for uploading;

[0014] **FIG. 5** is an illustration of the settings to be selected from a dialog box in software that may be used to compress the main folder for uploading;

[0015] **FIG. 6** is an illustration of the icon for the main folder after it is compressed;

[0016] **FIG. 7** is an illustration of a menu command used to extract the main folder from a compression archive;

[0017] **FIG. 8** is an illustration of the settings to be selected from a dialog box to decompress the contents of a compression archive to a destination folder;

[0018] **FIG. 9** is an illustration of the settings to be selected from a dialog box in software that may be used to convert .avi movie files into animated .gif files;

[0019] **FIG. 10** is an illustration of the setting to be selected from a dialog box in software that may be used to convert .avi movie files into animated .gif files;

[0020] **FIG. 11** is an illustration of the settings to be selected from a dialog box in software that may be used to convert .avi movie files into animated .gif files;

[0021] **FIG. 12** is an illustration depicting the selection by an instructor, within a video animation software program, of a key point in a student's swing for conversion into a .tiff file;

[0022] **FIG. 13** is an illustration of a dialog box from a software program that may be utilized for the batch conversion of .tiff files to .jpeg files;

[0023] **FIG. 14** is an illustration depicting the settings to be selected in a dialog box from a software program that may be utilized for the batch conversion of .tiff files to .jpeg files;

[0024] **FIG. 15** is an illustration depicting the settings to be selected in a dialog box from a software program that may be utilized for the batch conversion of .tiff files to .jpeg files;

[0025] **FIG. 16** is an illustration depicting the settings to be selected in a dialog box from a software program that may be utilized for the batch conversion of .tiff files to .jpeg files;

[0026] **FIG. 17** is an illustration depicting the settings to be selected in a dialog box from a software program that may be utilized to convert animated gif files into .jpeg sequences;

[0027] **FIG. 18** is an illustration of a dialog box from a software program that may be utilized to import movies into a lesson template;

[0028] **FIG. 19** is an illustration of a button from a software program that may be utilized to import movies into a lesson template;

[0029] **FIG. 20** is an illustration of an onion skin marker from a software program that may be utilized to import movies into a lesson template;

[0030] **FIG. 21** is an illustration of a dialog box from a software program that may be used to publish media from a lesson template into an application file; and

[0031] **FIG. 22** is a flowchart illustrating a file hierarchy that may be used in the methodologies described herein.

DETAILED DESCRIPTION OF THE INVENTION

[0032] In light of the above, there is a need in the art for a method for providing sports instruction in general, and golf instruction in particular, that utilizes video analysis of a student's technique, that makes this analysis readily available to the student at any time from almost any location, that is not dependent on the use of particular video formats, and that does not require any special software to view. These and other needs are met by the methodologies, business methods, devices, and software programs disclosed herein and hereinafter described.

[0033] In accordance with the teachings herein, a video analysis tool for sports instruction is provided which includes executable viewer files of the student's technique that are available to the student over the Internet. The viewer files may be created in accordance with the following described methodology, it being understood that a number of variations to this approach are possible within the scope of the teachings herein.

[0034] First, a sports instructor creates video footage of a student's technique. The video footage may be created in a variety of formats and media, but is forwarded, preferably in the form of media files sent by email, to a business entity having a web site associated therewith. The business entity assembles the video footage into one or more executable viewer files that are accessible to the student from the business entity's web site. The student is then notified when the viewer files are available for access on the web site. Since the viewer files are executable files, no special software is required for the student to view the files. Rather, the student can access the files at any time, and from any place, through an Internet connection.

[0035] Software containing suitable instructions for implementing the methodology described above is also provided herein, as is a business model which utilizes this software and methodology. This methodology, software and business model may be further understood with reference to the non-limiting examples set forth below.

EXAMPLE 1

[0036] This example illustrates a business model suitable for implementing the methodologies described herein in the field of golf instruction.

[0037] A business entity is provided which has a website associated therewith. The business entity has a plurality of clients (typically golf instructors) that submit video footage of their students' technique and/or of lessons given to their students. The video footage is submitted via the Internet by the clients to the business entity as media files. The business entity then assembles the media files into customized Instant Replay Media Viewer (IRMV) files. The IRMVs are executable files (.exe files), and are preferably organized and archived on the business entity's web site. These individual files preferably correspond to specific lessons given on specific dates. The files typically include movies, images, text, and interactive controls. The date of the lesson is preferably contained in the name of the executable file. All players and required software or code are preferably embedded in these stand-alone executable files so that the files do not require any outside software or decompressors to run.

[0038] The IRMVs preferably open and play in full screen. The full screen capabilities of the viewer are achieved through action scripts. The full screen commands typically allow the viewer to open in full screen, to align itself to the center of the monitor, to be viewed at 100% size without scaling, and to exit the viewer with a single click of a button. The behaviors and interactivities of the viewer are achieved through a series of actions. Scripts can consist of a single action, such as instructing a movie to stop playing, or a series of actions, such as first evaluating a condition and then performing an action.

[0039] Each viewer contains different scenes (or pages). The scenes can contain various custom features, such as video playback with text, frame by frame images with text, database text with illustrations, and summary text with illustrations. The scenes are navigated through a series of buttons. Each button in the main menu brings up a different page, making the organization and analysis of the information quick and efficient.

[0040] As EXAMPLE 1 illustrates, a means is provided herein by which a student can access personalized instructional viewer files on his technique at any time through an Internet connection, and without the need to have any software installed on the machine the student is using. This allows a student to access the viewer files at his own convenience, at any location (e.g.,a cyber cafè, hotel room, or the like) from which the Internet may be accessed, and without the need to have access to his personal computer or

to carry the files with him. Hence, this methodology is particularly well adapted to sports enthusiasts who travel extensively.

[0041] One skilled in the art will appreciate that the business model described above may be modified in various ways. For example, rather than, or in addition to, posting the executable viewer files to its own web site, the business entity could post these files to a website associated with one or more of its clients. The business entity could also email or otherwise make these files available to its clients, either in lieu of or in addition to posting them to a website.

[0042] Moreover, in addition to being customized to the student, the viewer files may also be customized to the student's instructor. Thus, for example, the viewer files may contain logos or indicia which identify the instructor and/or the entity (e.g., country club) that the instructor is associated with. The viewer files may also contain controls which are particular to the instructor.

[0043] Thus, for example, the business entity which creates the viewer files may provide a variety of packages to its clients. Each of these packages, which may vary in price, may provide a particular collection of viewer file controls which enable the user to perform certain operations while accessing the files. For example, these controls may allow the user to make markings or annotations on the files, or to manipulate certain playback or display features.

[0044] In some variations of the business model described herein, the business entity does not handle converting the video files to executable viewer files, but merely distributes or licenses a software package or viewer to its clients which enable its clients to do so. This software or viewer may be distributed as an off-the-shelf product, or as one or more products which can be downloaded from a web site (the download process may be password protected and/or may require suitable identification of the downloader). The software or viewer may also be provided in various versions. For example, a stripped-down version of the software or viewer may be provided as freeware that is available for download from the Internet, and an enhanced or premium version of the software or viewer may be provided for retail. In some embodiments, the business entity may manage a web site that its clients can upload the software or viewer files to.

[0045] The following is a detailed description of one possible embodiment of a computer process that may be utilized in the practice of the methodologies disclosed herein. The embodiment includes a business, referred to herein as a service provider, which works in concert with a plurality of golf instructors to provide instructional video to the instructors' clients.

EXAMPLE 2

[0046] This example illustrates a process that may be used by a golf instructor or other client in the business model of EXAMPLE 1 to submit video footage of their students to the business entity.

[0047] The business entity makes available to its clients an upload template that enables the clients to compress and upload sets of video files (preferably in .avi format) and text files (preferably in .txt format) to a website. The video files will typically be video footage of a student's technique, and the text files may contain the client's comments on the student's technique.

[0048] A client records video footage (preferably in .avi format) of a student's swing from several different views. The text files (.txt) can be created in any word processing software, but are preferably created with WINDOWS NOTEPAD®, available commercially from Microsoft, Inc., Seattle, Wash. In one possible embodiment, the upload template is in the form of a single main folder which contains a series of subfolders. One of these subfolders preferably contains different scenes (pages) the client wishes to use in his customized lesson template (it is to be noted here that the lesson template is different from the upload template).

[0049] For each new lesson, the client takes the template, renames the main folder, renames the date of the main folder, puts the video (.avi) and text files (.txt) in their appropriate subfolders, and compresses the main folder with compression software for upload. An example of a system for naming the main folder is shown in **FIG. 1**. An example of the subfolder naming system is shown in **FIG. 2**.

[0050] In the particular subfolder illustrated in **FIG. 2**, the client's template has a database page, 3 pages to record swings from different views, and a summary page for his lesson text. Folders store the various media which make up a complete lesson. These 5 folders each contain the videos (preferably .avi files) and text (preferably .txt files) for those pages. The videos and text are put into these sub folders by the client. After all files are put into the appropriate folders, the client takes the main folder and compresses it into a single compressed file.

[0051] In the database and summary subfolders, the client preferably puts only a single text file (preferably in .txt format) for each folder. In the case that a page has more than one text box, then the client preferably names the .txt files in the subfolder using the convention 1.1, 1.2, etc.

[0052] In the frontview, backview, and rearview subfolders depicted in **FIG. 2**, there is a final layer of subfolders. The last layers of subfolders in the upload template are problem and solution subfolders for each view. There is 1 problem and 1 solution folder for each view, making the total 6 for this client's template. **FIG. 3** shows illustrations of the problem and solution subfolders contained in the frontview, backview, and rearview subfolders.

[0053] The videos (.avi) and the text (.txt) files for the different views are placed inside the problem and solution subfolders. Each problem subfolder preferably has 1 .avi file and 1 .txt file. Each solution subfolder preferably has only 1 .avi file and 1 .txt file as well.

[0054] Once the client has placed all the proper files in the correct subfolders, the main folder is ready to be compressed into a single compressed file for uploading. The following steps may be followed to compress the file using commercially available compression software such as that sold by Nico Mak Computing Inc. under the trade name WINZIP®. To compress the main folder of the upload template with WINZIP®, the following instructions are used:

[0055] (a) Right click the main folder;

[0056] (b) Choose WinZip;

[0057] (c) Choose Add to Zip file (as shown in **FIG. 4**)

[0058] (d) Use the setting below from **FIG. 5** and then Click on Add.

[0059] A single compressed (.zip) file is created, and is now ready to upload to a server. **FIG. 6** illustrates what the main folder of the upload template should look like, once it is compressed into a single file for upload.

[0060] A number of variations are possible in the methodology described above. In one preferred embodiment, for example, the upload template is a single main folder which contains a series of video files and a single text document with hot links to the video files. This approach avoids the need for compression in many instances, since the upload template may be copied and pasted directly to an ftp: site.

EXAMPLE 3

[0061] This example illustrates a procedure that may be used to access files submitted by a client in a business model of the type described in EXAMPLE 1.

[0062] A single zip file is downloaded from the server, and uncompressed with WINZIP® file compression software using the following steps:

[0063] (a) Right click on the zip file;

[0064] (b) Choose WinZip;

[0065] (c) Choose Extract to as shown in **FIG. 7** below;

[0066] (d) After applying the setting from **FIG. 8** below, click on Extract.

[0067] The media for the lesson is now ready for programming.

EXAMPLE 4

[0068] This example illustrates the formatting of files (that have been submitted by a client and subsequently decompressed) into executable files that can be accessed and viewed over the Internet.

[0069] Formatting of the submitted, decompressed files may be achieved, for example, through the use of IMAGE READY® 7.0 video animation software available commercially from Adobe Inc. (San Jose, Calif.). The first operation in IMAGE READY® 7.0 video animation software is to convert the .avi movies into animated .gifs. This file type conversion must be done to all movies for the lesson template. The .avi files may be imported into the IMAGE READY® 7.0 video animation software through the following steps:

[0070] (a) Open ADOBE IMAGE READY® 7.0 animation software;

[0071] (b) Choose File;

[0072] (c) Choose Open

[0073] (d) Double click the avi from the selection list to open it;

[0074] (e) Choose the following settings, from the Open Movie dialog box depicted in **FIG. 9**;

[0075] (f) Click on OK.

[0076] Before the .avi movies can be converted into an animated .gifs, the settings in the optimize window of Adobe IMAGE READY® 7.0 must be set to the settings shown in **FIG. 10**. After this step, the avi file is now ready to be converted to a .gif file.

[0077] To convert an .avi movie into an animated .gif file, the following steps may be used:

[0078] (a) Choose File;

[0079] (b) Choose Save Optimized AS;

[0080] (c) Save the animated gif file using the file settings shown in **FIG. 11**;

[0081] (d) Click on Save.

[0082] The second operation in Adobe IMAGE READY® 7.0 video animation software is to take out the key point of the swing from each movie. The number of key frames taken out of each movie is a decision made by the individual client. Each of these individual image files are saved in .tiff format.

[0083] To take out the key points of the swing for each movie, the following steps may be taken:

[0084] (a) Open an animated .gif;

[0085] (b) Choose Window;

[0086] (c) Choose animation to open the animation window in Adobe Image Ready 7.0;

[0087] (d) Highlight the key frame to be taken out by single left clicking on it in the animation window, as shown in **FIG. 12**;

[0088] (e) Choose File;

[0089] (f) Choose Export Original;

[0090] (g) Select .tiff as the file type from the drop down menu, then Click on Save;

[0091] (h) Next, a box will come up called the TIFF Write Options dialog box. Select None, and then Click on OK to save it in .tiff format;

[0092] (j) Repeat process for the other key points of the movie.

EXAMPLE 5

[0093] This example illustrates a batch process that may be used to reduce the file size of the picture files produced in EXAMPLE 4.

[0094] Given limitations on bandwidth and download speeds, it is frequently desirable to minimize the size of picture files published on the Internet while maintaining an acceptable level of resolution. Hence, in a method such as that described in EXAMPLE 4, it will frequently be desirable to convert the resulting .tiff files to .jpeg files. Since the need may exist to convert several of these files, a batch process is desirable.

[0095] Suitable software, such as FIREWORKS® 4 file conversion software available commercially from Macromedia Inc. (Salt Lake City, Utah), may be used to batch the

.tiff images created with ADOBE IMAGE READY® 7.0 in EXAMPLE 4. This batch process will convert the .tiff files to .jpeg files, and will size the image. In particular, the .tiff files will be converted to .jpeg files, and will be scaled to 40% of their original size. The advantage of the batch process is that it can perform this conversion to all of the .tiff files at once, instead of opening and saving all of the images individually. The batch process allows a normally large amount of work to be converted with speed, and efficiency.

[0096] To perform the batch process in Macromedia FIREWORKS® 4 file conversion software, the following steps may be used:

[0097] (a) Choose File;

[0098] (b) Choose Batch Process;

[0099] (c) Double Click on a file to add it to the batch process (there is no particular limit to the files that may be added), as shown in **FIG. 13**;

[0100] (d) After all the files are added to the batch process, Click on Next;

[0101] (e) Once next is pressed the batch options box is brought up as shown in **FIG. 14**;

[0102] (f) Choose the Add button, to add Export and Scale to the batch options;

[0103] (g) **FIG. 14** shows the settings for the Export option, while **FIG. 15** shows the settings for Scale option. After using the settings from **FIGS. 14 and 15**, Click on Next to continue;

[0104] (h) **FIG. 16** illustrates the last batch dialog box. Click on Browse to choose a location to which all of the images will be saved.

[0105] (i) Click on Batch, and the process will begin. As a result of this operation, all of the .tiff files are converted to .jpegs and resized in one operation.

EXAMPLE 6

[0106] This example illustrates a method that may be used to convert the animated .gif files created in EXAMPLE 4 into .jpeg sequences.

[0107] A conversion template was created in FLASH® player software, available commercially from Macromedia Inc., to convert the animated .gif files created in EXAMPLE 4 into .jpeg sequences. The resulting template is a .fla file. The conversion template is an animated .gif, with the background already set to the same size as the animated gifs being converted.

[0108] To convert an animated gif into a .jpeg sequence, the following steps may be used:

[0109] (a) Open the conversion template;

[0110] (b) Choose Edit;

[0111] (c) Choose Select All;

[0112] (d) Choose File;

[0113] (e) Choose Import;

[0114] (f) Select the animated gif you want to convert, and Click on Open. The new animated gif is now imported over the sample movie, and is ready to be converted into a .jpeg sequence;

[0115] (g) Choose file;

[0116] (h) Choose Export Movie;

[0117] (i) Pick a folder to save the .jpeg sequence to;

[0118] (j) Click on Save;

[0119] (k) An Export box will appear. Use the export settings shown in **FIG. 17**. This step must be repeated for all movies used in the lesson.

EXAMPLE 7

[0120] This example illustrates a method that may be used for inserting media files into a lesson template of the type described in EXAMPLE 6. The resulting file can then be made available to a student for download.

[0121] The three types of media that will be inserted into the lesson template are:

[0122] 1. Movie Clips (.jpeg sequences)

[0123] 2. Images (.jpeg files)

[0124] 3. Text

[0125] The lesson template is a .fla file customized by the client. The client chooses details such as background colors, scene (pages) layouts, database page design, and other various types of custom features. The lesson template's design will be used for every student the client gives a lesson to.

[0126] First, the lesson template is opened. The lesson template and the conversion template will each be .fla files.

[0127] Prior to insertion into the template, the video files may be converted into .jpeg sequences using the approach described in EXAMPLE 6. To import the videos into the lesson template, the following steps may be used:

[0128] (a) Open the lesson template;

[0129] (b) Change to the specific scene to import the video;

[0130] (c) Delete the video to be replaced;

[0131] (d) Select the layer of the deleted video;

[0132] (e) Choose File;

[0133] (f) Choose Import;

[0134] (g) Choose the .jpeg file that is the first scene of the sequence by double clicking it. Double clicking the file will bring up the box illustrated in **FIG. 18**;

[0135] (h) Choose Yes and the jpeg sequence will be imported into the scene.

[0136] The last step in inserting the movie is to reposition it to the original coordinates of the deleted video. Videos will not import in the same place as the original, because all media in flash imports in the center of the scene. The frames of the .jpeg sequence will be moved together in a technique called onion skinning that is utilized by the FLASH® player software.

[0137] To onion skin a jpeg sequence for moving, the following steps may be taken:

[0138] (a) Turn off all layers, except the one with the .jpeg sequence being moved;

[0139] (b) Click the edit multiple frames button shown below in **FIG. 19**. The onion skin markers will be displayed on top of the timeline, as illustrated in **FIG. 20**;

[0140] (c) Stretch the ends of the marker to cover the entire movie;

[0141] (d) Choose Edit;

[0142] (e) Choose Select All;

[0143] (f) Choose Windows;

[0144] (g) Choose Panels;

[0145] (h) Choose Info;

[0146] (i) In the info window, change the movie's xy coordinates to its new coordinates, and all the key frames will move together as one unit.

[0147] Image files may be imported and moved using the same commands for inserting movies.

[0148] Text can be inserted from .txt files, made with any version of WINDOWS® Notepad software available commercially from Microsoft Inc., Seattle, Wash. Sample text already exists in the lesson templates. Text can be copy and pasted straight into the FLASH® player software from WINDOWS® Notepad software.

EXAMPLE 8

[0149] This example illustrates the publication of a lesson template into an application file.

[0150] After all the media is imported into the lesson template, it is ready to be published into an application file. Application (.exe) files are single files. To publish the template into a .exe file, use the following steps:

[0151] (a) Choose File;

[0152] (b) Choose Publish Setting to bring up the dialog box shown in **FIG. 21**;

[0153] (c) As shown in **FIG. 21**, check only the box for Windows Projector (.exe);

[0154] (d) Click on Publish to create the Application (.exe) file.

[0155] **FIG. 22** illustrates one possible file hierarchy for a lesson template that may be used in the practice of some of the methodologies described herein. The template includes a database/main menu page **101** which provides a general overview of the files contained in the template. From the database/main menu page, a user may navigate to a plurality of other pages, including a front videos page **103**, a back videos page **105**, a rear videos page **107**, a frames introduction page **109**, and a summary page **111**. A front frames page **113**, back frames page **115**, and rear frames page **117** are accessible from the frames introduction page.

[0156] The front **103**, back **105** and rear **107** videos pages contain .jpeg sequences based on video footage of the student taken from different vantage points. These pages allow the student to view and analyze his technique from different perspectives. Moreover, because the original video footage has been converted to a series of compact .jpeg files, they may be readily viewed even over a slow Internet connection.

[0157] The frames introduction page **109** contains an overview of the images selected by the client in the Adobe IMAGE READY® 7.0 video animation software (see EXAMPLE 4) which correspond to key points of the student's swing as captured in the original video footage. From this page, a user may navigate to the images themselves, which are categorized into front **113**, back **115** and rear **117** frames pages, depending on the perspective they were taken from.

[0158] The summary page **111** contains text created by the instructor. This text may include comments on the student's technique, suggestions for improvement, performance evaluations, and the like.

[0159] The various examples described above illustrate the methodologies described herein, from the step of creating the initial video footage to the step of publishing executable files based on this footage on the Internet. One skilled in the art will appreciate that various modifications can be made to these methodologies without departing from the scope of the teachings herein.

[0160] For example, while it has been advantageous to illustrate various features of the methodologies disclosed herein with reference to specific file formats and software, one skilled in the art will appreciate that other file formats could be used, and that other software containing the same functionality could also be utilized. In particular, a variety of file compression and video and image manipulation software is known to the art and could be utilized in the practice of the methodologies disclosed herein. Furthermore, rather than using multiple software products to implement the steps described above, a comprehensive software suite could be provided that accomplishes some or all of these steps. Such a comprehensive software suite may permit the elimination of one or more of the steps described above, and may automate various aspects of the process so that less input is required by the user.

[0161] Moreover, while the methodologies, business models and software described herein has been illustrated primarily with respect to the sport of golf, it will be appreciated that these methodologies, business models, and software may be used as an instructional tool in a wide variety of sports, activities and disciplines. These include, without limitation, tennis, football, baseball, swimming, bowling, cooking, and the like.

[0162] Although the present invention is described in detail, it should be understood that various changes, substitutions and alterations can be made hereto without departing from the spirit and scope of the invention.

What is claimed is:

1. A method for providing sports instruction to a student, comprising the steps of:

receiving video footage of the student engaging in the sport;

programming the video footage into an executable viewer file accessible on a web site; and

notifying the student when the viewer file is available on the web site.

2. The method of claim 1, wherein the sport is golf.

3. The method of claim 1, wherein the student is notified by email when the executable file is available on the web site.

4. The method of claim 1, wherein the executable file is password protected.

5. The method of claim 1, wherein the video is received electronically from the student's instructor.

6. The method of claim 5, wherein the steps of receiving the video and assembling the video into an executable file are performed by an entity that charges the instructor a fee for these services.

7. The method of claim 1, wherein the video footage is converted from a video file into a series of picture sequences.

8. The method of claim 7, wherein the picture sequences are .jpeg files.

9. The method of claim 1, wherein the video footage is converted from a video file into an animated .gif file.

10. The method of claim 9, wherein the video file is an .avi file.

11. The method of claim 9, wherein the animated .gif file is converted into a .jpeg sequence.

12. The method of claim 1, wherein the executable viewer file contains both video of a student's technique and picture files corresponding to key points of the student's technique.

13. The method of claim 1, wherein the executable viewer file contains a folder which includes video files of a student's technique, and a text file which includes hot links to the video files.

14. The method of claim 13, wherein the viewer file further comprises picture files corresponding to key points of the student's technique, and wherein the text file includes hot links to the picture files.

15. The method of claim 1, wherein the step of assembling the video footage into an executable viewer file includes the steps of selecting key frames from the video footage and converting those frames into a sequence of image files.

16. A method of doing business, comprising the steps of:

creating a business entity; and

executing a contract with at least one sports instructor having at least one student associated therewith whereby, in exchange for the payment of a fee by the sports instructor, the business entity agrees to (a) receive video footage from the sports instructor, and (b) create, from the video footage, an executable viewer file that may be accessed and viewed on a web site.

17. The method of claim 16, wherein the business entity has a website associated therewith, and wherein the executable viewer file may be accessed and viewed on the business entity's web site.

18. A business, comprising:

a business entity;

a client associated with said business entity; and

a contract between said business entity and said client, wherein the contract provides that, in exchange for the payment of a fee by the client, the business entity agrees to (a) receive video footage from the client, and (b) create, from the video footage, an executable viewer file that may be accessed and viewed on a web site.

19. The method of claim 18, wherein the business entity has a website associated therewith, and wherein the executable viewer file may be accessed and viewed on the business entity's web site.

20. A software program disposed in a tangible medium and containing suitable instructions for performing the steps of:

creating an executable viewer file from video footage of a student practicing an activity;

publishing the viewer file to a website; and

issuing a notification when the executable file is available on the web site.

21. The software program of claim 20, further comprising the step of receiving the video file via electronic mail.

22. The software program of claim 20, wherein the step of issuing a notification includes the step of sending a message to the student when the executable file is available on the web site.

23. A website, comprising:

a software program disposed in a tangible medium and containing suitable instructions for publishing the web site of claim 20.

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