

PATROLL Winning Submission

U.S. Patent 7,860,320

U.S. Patent 7,860,320 (“*Monument Peak*” or the “patent-at-issue”) was filed on June 26, 2006, and claims priority on the same date. Claim 1 of the patent-at-issue generally relates to digital image capture devices and classifying image regions based on recorded location where the photo is taken. The method includes an image capture device with a GPS or location determining device to associate a geographical location to a captured image or video. The location determining device is also able to provide the time when the image or video was captured. The information from the location determining device is used to classify regions of image pixels in the captured image or video into one or more material classes based on a spatial context model.

The primary reference, EP1622081A1 (“*Yusuke*”), was filed on April 15, 2004, and was published on February 1, 2006. The patent discloses an apparatus to recognize objects in video images which consists of an input means for video image data and image capturing information, storage means, and object recognizing means. The input means is connected to a GPS device which inputs image capturing information to the object recognizing means. The object recognizing apparatus then calculates similarity based on the image capturing information and stored object information. Finally, based on the calculated similarity, presence of an object in the video image is determined.

A sample claim chart comparing claim 1 of *Monument Peak* to *Yusuke* is provided below.

US7860320 (“ <i>Monument Peak</i> ”)	A. EP1622081A1 (“ <i>Yusuke</i> ”)
<p>1.pre. A method of classifying regions of image pixels in a digital image or video captured by an image capture device comprising:</p>	<p>A. US7860320 “A video image object recognizing apparatus according to the present invention comprises input means for inputting video image data and image capturing information which is information for determining an area where an image will be captured, . . . partial video image extracting means for extracting partial video image data which is either video image data of a partial area of the video image based on the video image data or is video image data of the entire video image, . . .” <i>Yusuke</i> at par. 0008</p> <p>“A process of extracting a partial video image using segmentation may be employed. The segmentation refers to a process of dividing a video image into several areas based on an analysis of colors, edges, boundary complexities, etc. of pixels and regions.” <i>Yusuke</i> at par. 0072</p> <p>“Input device 1 inputs a video image that is output from a video input unit (not shown) for capturing video images, such as a CCD digital camera device, a video camera device, or the like.” <i>Yusuke</i> at par. 0041</p>
<p>1.a. providing a geographic location determining device associated with the image capture device that provides an image capture GPS location associated with an image;</p>	<p>A. US7860320 “Input device 1 is connected to a GPS device for measuring the latitude, longitude, and altitude of Input device 1, and identifies an image capturing position and a moving speed.” <i>Yusuke</i> at par. 0042</p>
<p>1.b. using the location determining device to provide the image capture GPS location at substantially the time that the digital image or video was captured; and</p>	<p>A. US7860320 “Input device 1 inputs information as to the image capturing position, the image capturing direction, the moving direction, and the moving speed, and angle-of-view information, combines the input information to generate image capturing information (step A2), and records the generated image capturing information on the video image recording medium on which the video image data is recorded.” <i>Yusuke</i> at par. 0057</p> <p>“When the video input unit moves while it is capturing a video image, input device 1 identifies the direction in which the</p>

<p>(cont.) 1.b. using the location determining device to provide the image capture GPS location at substantially the time that the digital image or video was captured; and</p>	<p>video input unit moves, using the path data of the GPS device and the output from the magnetic compass device, the electronic compass device, or the gyrocompass device. The image capturing information includes angle-of-view information, captured date and time information which is information for identifying the date and time on which a video image is captured, information of the image capturing position, information of the image capturing direction, information of the moving direction, and information of the moving speed.” <i>Yusuke</i> at par. 0043</p>
<p>1.c. using a data processor for classifying regions of image pixels in the captured digital image or video into one or more material classes based on a spatial context model that indicates the likelihood that specific material classes occur or co-occur in images or videos captured at the particular image capture GPS location.</p>	<p>A. US7860320 1. A video image object recognizing apparatus comprising: . . . object recognizing means for recognizing an object contained in a video image based on the input video image data; wherein said object recognizing means comprises: estimating means for estimating an area where an image will be captured based on the image capturing information; matching means for matching the area where an image will be captured to a position represented by the positional information of the object stored in said storage means; partial video image extracting means for extracting partial video image data which is either video image data of a partial area of the video image based on the video image data or is video image data of the entire video image, from the input video image; visual feature information setting means for generating visual feature information of the partial video image data; similarity calculating means for comparing the visual feature information of the partial video image data and the visual feature information of the object stored in said storage means with each other to calculate a similarity therebetween; and decision means for determining whether or not an object is present in the video image, based on the input video image data, which is based on the result of matching by said matching means and on the result of the calculated similarity. <i>Yusuke</i> at claim 1 “Input device 1 is connected to a GPS device for measuring the latitude, longitude, and altitude of Input device 1, and identifies an image capturing position and a moving speed.” <i>Yusuke</i> at par. 0042 “When the video input unit moves while it is capturing a video image, input device 1 identifies the direction in which the</p>

video input unit moves, using the path data of the **GPS device** and the output from the magnetic compass device, the electronic compass device, or the gyrocompass device. The **image capturing information includes angle-of-view information**, captured date and time information which is information for identifying the date and time on which a video image is captured, **information of the image capturing position, information of the image capturing direction, information of the moving direction, and information of the moving speed.**” *Yusuke* at par. 0043