

EUROPEAN PATENT OFFICE  
U.S. PATENT AND TRADEMARK OFFICE

CPC NOTICE OF CHANGES 723

DATE: AUGUST 1, 2019

PROJECT DP0193

**The following classification changes will be effected by this Notice of Changes:**

<u>Action</u>	<u>Subclass</u>	<u>Group(s)</u>
<b>DEFINITIONS:</b>		
Definitions New:	G06T	7/11, 7/12, 7/13, 7/136, 7/143, 7/149, 7/155, 7/162, 7/168, 7/174, 7/181, 7/187, 7/194, 7/207, 7/215, 7/223, 7/231, 7/238, 7/246, 7/248, 7/251, 7/254, 7/262, 7/269, 7/277, 7/285, 7/292, 7/32, 7/33, 7/337, 7/344, 7/35, 7/37, 7/38, 7/41, 7/42, 7/44, 7/45, 7/46, 7/48, 7/49, 7/507, 7/514, 7/529, 7/536, 7/543, 7/557, 7/564, 7/571, 7/579, 7/596, 7/62, 7/64, 7/66, 7/68, 7/73, 7/74, 7/75, 7/77, 7/85, 7/90, 7/97
	G06T	2207/00, 2207/10, 2207/20, 2207/30
Definitions Modified:	G06T	7/0002, 7/0004, 7/0006, 7/0008, 7/001, 7/0012, 7/0014, 7/0016, 7/593

**No other subclasses/groups are impacted by this Notice of Changes.**

**This Notice of Changes includes the following [Check the ones included]:**

1. CLASSIFICATION SCHEME CHANGES

- A. New, Modified or Deleted Group(s)
- B. New, Modified or Deleted Warning(s)
- C. New, Modified or Deleted Note(s)
- D. New, Modified or Deleted Guidance Heading(s)

2. DEFINITIONS

- A. New or Modified Definitions (Full definition template)
- B. Modified or Deleted Definitions (Definitions Quick Fix)

3.  REVISION CONCORDANCE LIST (RCL)

4.  CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)

5.  CHANGES TO THE CROSS-REFERENCE LIST (CRL)

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## 2. A. DEFINITIONS (new)

**Insert:** The following new definitions.

### G06T 7/11

#### Definition statement

*This place covers:*

Methods evaluating properties or features of image regions to determine the segmentation result, e.g.:

- Thresholding, fixed threshold binarisation, multiple and histogram-derived thresholds
- Region growing, splitting and merging
- Colour-based segmentation
- Texture-based segmentation

#### References

##### Application-oriented references

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Cutting or merging image elements, e.g. region growing, watershed, clustering-based techniques, for pattern recognition	<a href="#">G06K 9/342</a>
Quantising the analogue image signal, e.g. histogram thresholding for discrimination between background and foreground patterns, for pattern recognition	<a href="#">G06K 9/38</a>
Extraction of features or characteristics of the image related to colour, for pattern recognition	<a href="#">G06K 9/4652</a>

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Analysis of texture	<a href="#">G06T 7/40</a>
Determination of colour characteristics	<a href="#">G06T 7/90</a>

## G06T 7/12

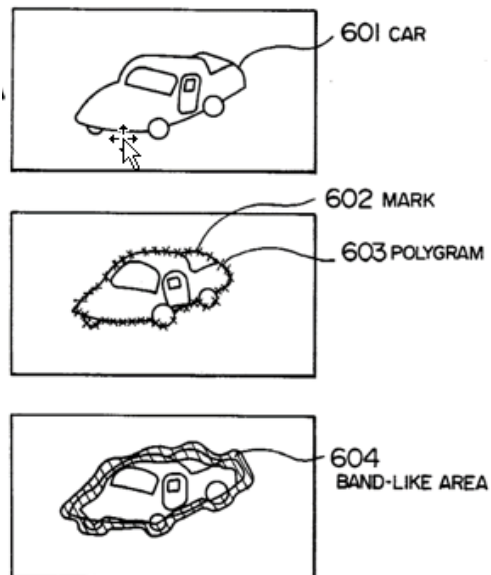
### Definition statement

*This place covers:*

Methods evaluating (closed) contours, edges or outlines of image portions to determine the segmentation result, e.g.:

- Contour-based segmentation
- Detection of straight edge-lines (e.g. buildings or roads from aerial images) which partition an image into regions
- Finding and linking edge candidate points or segments (edgels)

Illustrative examples:



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## References

### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Detecting partial patterns, e.g. edges or contours, or configurations, e.g. loops, corners, strokes, intersections, for pattern recognition	<a href="#">G06K 9/4604</a>
Extraction of features or characteristics of the image by coding the contour of a pattern, for pattern recognition	<a href="#">G06K 9/48</a>

## G06T 7/13

### Definition statement

*This place covers:*

In contrast to [G06T 7/12](#), this group covers documents pertaining purely to edge-detection without partitioning an image into regions, e.g.:

- Derivative methods (first-order or gradient, second order, e.g. Laplacian)
- Zero crossing
- Corner detection

Illustrative example:



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## References

### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Detecting partial patterns, e.g. edges or contours, or configurations, e.g. loops, corners, strokes, intersections, for pattern recognition	<a href="#">G06K 9/4604</a>
Extraction of features or characteristics of the image by coding the contour of a pattern, for pattern recognition	<a href="#">G06K 9/48</a>

## G06T 7/136

## References

### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Quantising the analogue image signal, e.g. histogram thresholding for discrimination between background and foreground patterns, for pattern recognition	<a href="#">G06K 9/38</a>
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## G06T 7/143

## Definition statement

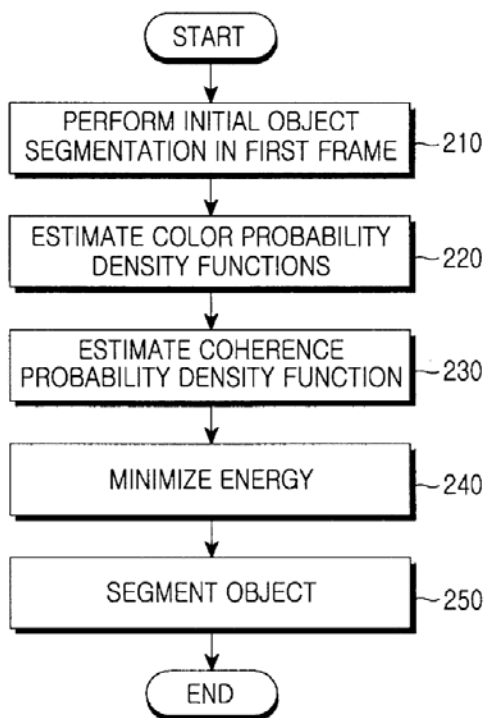
*This place covers:*

- Statistical/Probabilistic methods for segmentation

Illustrative example:

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## References

### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Detecting partial patterns or configurations by analysing connectivity relationship of elements of the pattern, for pattern recognition	<a href="#">G06K 9/4638</a>
Classification techniques based on a parametric (probabilistic) model, for pattern recognition	<a href="#">G06K 9/6277</a>
Markov models or related models or networks embedding Markov models for pattern recognition	<a href="#">G06K 9/6297</a>

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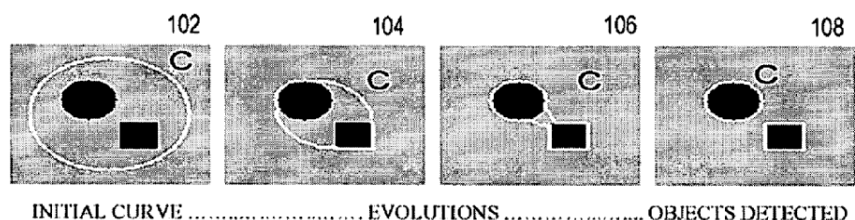
## G06T 7/149

### Definition statement

*This place covers:*

- Model-based segmentation (in particular when applied to biomedical images)
- Methods based on active shape models
- Methods based on active appearance models
- Methods based on active contours, active surfaces, snakes or deformable templates

Illustrative example:



### Evolution of Image Segmentation

### References

#### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Pattern recognition techniques involving a deformation of the sample or reference pattern or elastic matching	<a href="#">G06K 9/6206</a>
Matching of contours based on a local optimisation criterion, e.g. snakes or active contours, for pattern recognition	<a href="#">G06K 9/6207</a>
Matching based on shape statistics, e.g. active shape models, for pattern recognition	<a href="#">G06K 9/6209</a>
Matching based on statistics of image patches, e.g. active appearance models, for pattern recognition	<a href="#">G06K 9/621</a>

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**Special rules of classification**

For Active shape model [ASM], Indexing Code [G06T 2207/20124](#) should be added.

For Active appearance model [AAM], Indexing Code [G06T 2207/20121](#) should be added.

For Active contour; Active surface; Snakes, Indexing Code [G06T 2207/20116](#) should be added.



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## G06T 7/155

### Definition statement

*This place covers:*

- Morphological methods
- Watersheds
- Toboggan-based methods

Illustrative examples:

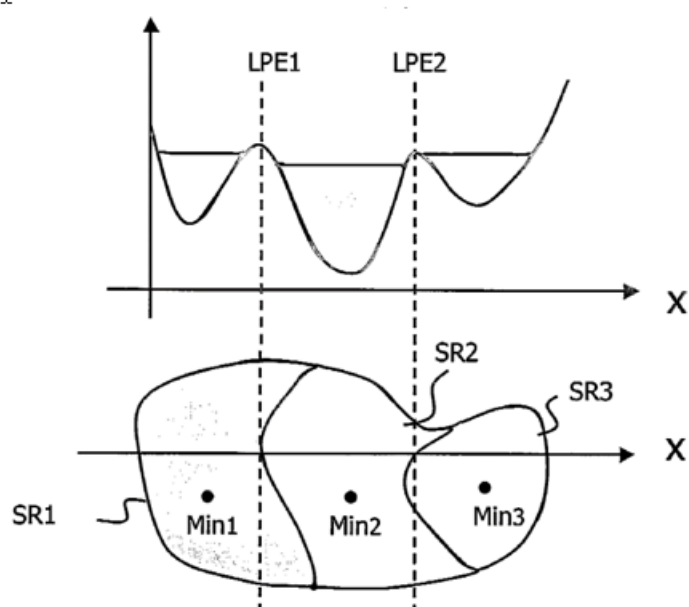


Figure 1. The 1D profile  $I(x)$  representing the intensity of a dark object of interest on a light background, forms three basins which correspond to local minima Min1, Min2 and Min3 of the intensity of the segmented region. The three basins give rise to two watershed lines LPE1 and LPE2, which divide the segmented region into three sub-regions SR1, SR2 and SR3.

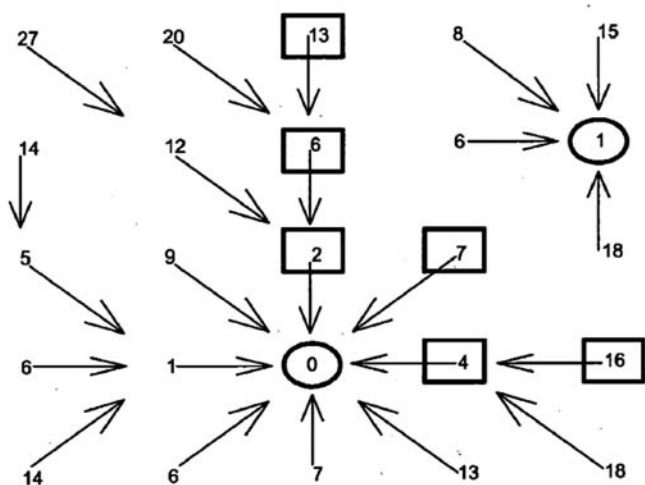


Figure 2. Toboggan-based object segmentation

## References

### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Combinations of pre-processing functions using a local operator, for pattern recognition	<a href="#">G06K 9/56</a>
Cutting or merging image elements, e.g. region growing, watershed, for pattern recognition	<a href="#">G06K 9/342</a>
Smoothing or thinning the pattern, e.g. by morphological operators, for pattern recognition	<a href="#">G06K 9/44</a>

### Special rules of classification

For Morphological image processing, an Indexing Code from the range of [G06T2207/20036](#) to [G06T 2207/20044](#) should be added.

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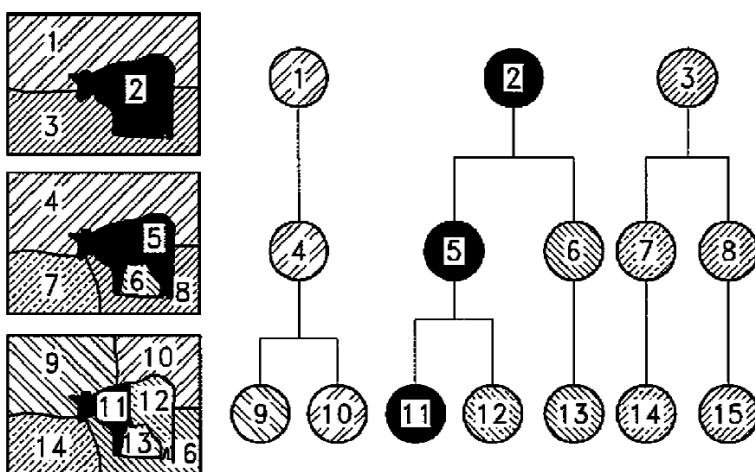
## G06T 7/162

### Definition statement

*This place covers:*

- Graph-cut methods

*Illustrative example:*



### References

#### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Feature extraction by graphical representation, e.g. directed attributed graphs, for pattern recognition	<a href="#">G06K 9/469</a>
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#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Hierarchical clustering techniques, for pattern recognition	<a href="#">G06K 9/6219</a>
Non-hierarchical partitioning techniques based on graph theory, for pattern recognition	<a href="#">G06K 9/6224</a>
Graph matching, for pattern recognition	<a href="#">G06K 9/6892</a>

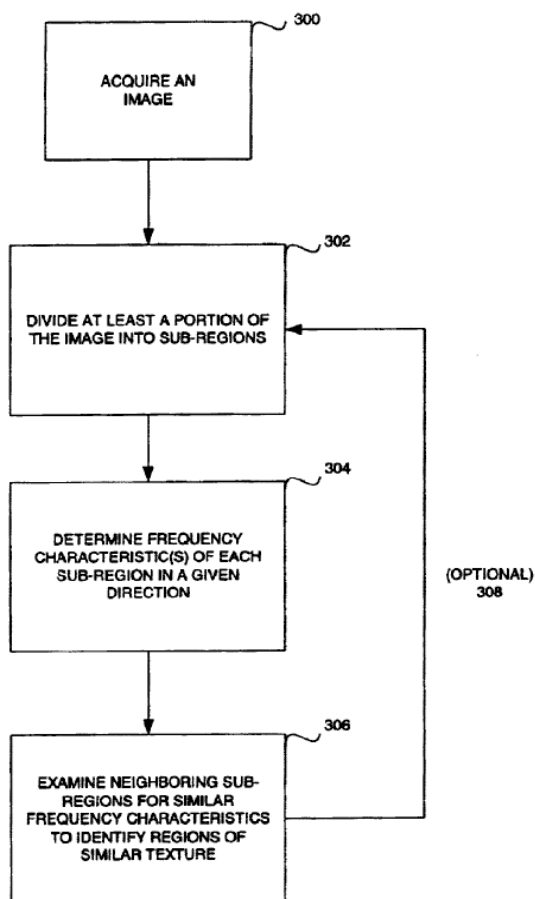
## G06T 7/168

### Definition statement

*This place covers:*

- Fourier-, FFT-, Wavelet-based methods
- Gabor-, Laplace-transform-based methods
- Discrete cosine transform [DCT]-based methods
- Walsh-Hadamard transform [WHT]-based methods
- Hough transform

Illustrative example:



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## References

### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Detecting partial patterns using transforms (e.g. Hough transform), for pattern recognition	<a href="#">G06K 9/4633</a>
Feature extraction by deriving mathematical or geometrical properties, frequency domain transformations, for pattern recognition	<a href="#">G06K 9/522</a>
Feature extraction by deriving mathematical or geometrical properties, scale-space transformation, e.g. wavelet transform, for pattern recognition	<a href="#">G06K 9/527</a>

## Special rules of classification

For Transform domain processing, an Indexing Code from the range of [G06T2207/20052](#) to [G06T2207/20064](#) should be added.

## **G06T 7/174**

### Definition statement

*This place covers:*

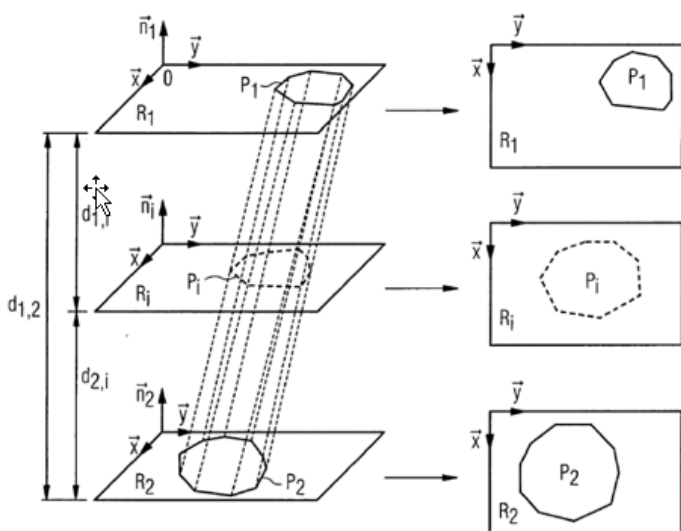
- Using information from multiple images to determine segmentation result
- Segmentation based on several images taken under varying illumination, focus, exposure, etc.
- Segmentation of a video frame involving several image frames of the video sequence, e.g. neighbouring frames
- Temporal and spatio-temporal segmentation, if not based on motion information
- Segmentation using several (neighbouring) slices of a tomographic data set (CT, MRI, PET, etc.), propagation of segmentation results between neighbouring slices

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- Hierarchical segmentation methods (including wavelet-based schemes), if final segmentation result is derived from (partial) results at different resolution levels
- Multispectral image segmentation using information from different spectral bands (beyond the visible spectrum)

Illustrative example :



## References

### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Motion-based segmentation	<a href="#">G06T 7/215</a>
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## G06T 7/181

### Definition statement

*This place covers:*

Image segmentation or edge detection methods based on

- edge growing
- edge linking
- edge following

### References

#### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Detecting partial patterns by analysis of the connectivity relationships of elements of the pattern, e.g. by edge linking, connected component or neighbouring slice analysis, for pattern recognition	<a href="#">G06K 9/4638</a>
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## G06T 7/187

### Definition statement

*This place covers:*

Image segmentation methods based on

- region growing; region merging
- split-and-merge
- connected component labelling

Illustrative example:

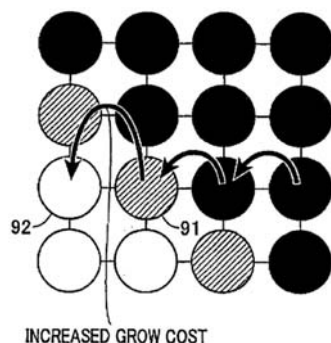


Figure 1. Region growing method which accumulates costs along a pixel path and as soon as the accumulated costs between neighbouring pixels (91, 92) become higher than a threshold, the growing is stopped.

### References

#### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Detecting partial patterns by analysis of the connectivity relationships of elements of the pattern, e.g. by edge linking, connected component or neighbouring slice analysis, for pattern recognition	<a href="#">G06K 9/4638</a>
Segmentation of touching or overlapping patterns, cutting or merging image elements, e.g. region growing, watersheds, for pattern recognition	<a href="#">G06K 9/342</a>



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## G06T 7/194

### Definition statement

*This place covers:*

Image segmentation or edge detection methods based on a separation of foreground, i.e. relevant parts, and background, i.e. non-relevant parts of an image.

### References

#### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Quantising the analogue image signal, e.g. histogram thresholding for discrimination between background and foreground patterns, for pattern recognition	<a href="#">G06K 9/38</a>
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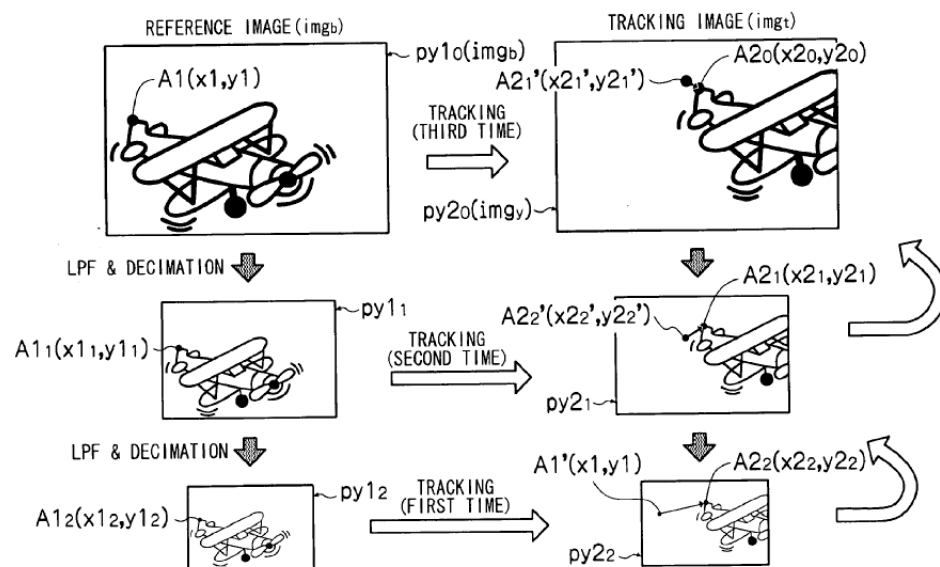
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## G06T 7/207

### Definition statement

*This place covers:*

Illustrative example:



### References

#### Limiting references

*This place does not cover:*

Multi-resolution motion estimation or hierarchical motion estimation for coding, decoding, compressing or decompressing digital video signals
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H04N 19/53
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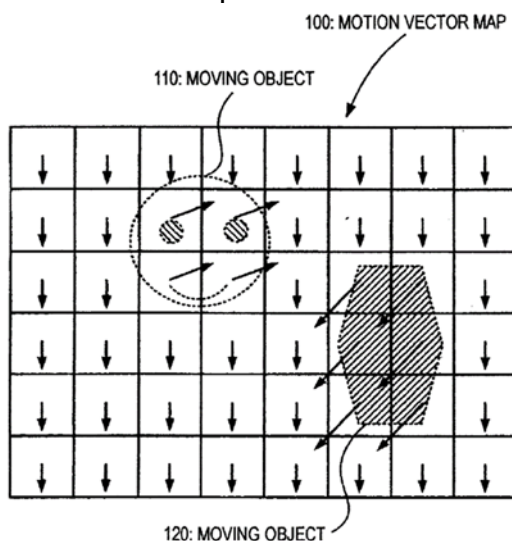
## G06T 7/215

### Definition statement

*This place covers:*

- Figure-ground segmentation by detection of moving object(s) from dense motion representation
- Partitioning an image into regions of homogenous 2D (apparent) motion
- Based on analysis of motion vector field or motion flow
- Grouping from optical flow

Illustrative example:



### References

#### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Retrieval of video data using motion, e.g. objection motion	<a href="#">G06F 16/786</a>
Segmenting video sequences, e.g. scene change analysis	<a href="#">G06K 9/00765</a>
Scene change analysis	<a href="#">H04N 5/147</a>

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**Informative references***Attention is drawn to the following places, which may be of interest for search:*

Segmentation; Edge detection	<a href="#">G06T 7/10</a>
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**G06T 7/223****References****Application-oriented references***Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Movement estimation for television pictures	<a href="#">H04N 5/144</a>
Predictive coding in television systems using temporal prediction with motion detection	<a href="#">H04N 19/503</a>

**Informative references***Attention is drawn to the following places, which may be of interest for search:*

Image coding using predictors	<a href="#">G06T 9/004</a>
Use of motion vectors for image compression, coding using predictors, video coding	<a href="#">H04N 19/52</a>

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## G06T 7/231

### Definition statement

*This place covers:*

Full, exhaustive, brute force search

Illustrative example:

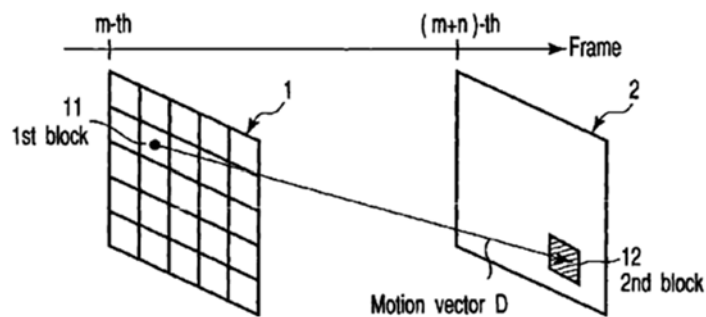


Figure 1. A motion vector between the m-th frame (1) and the (m+n)-th frame (2) is detected. At first, the image data of the m-th frame 1 is divided into a plurality of first blocks 11, and the first blocks 11 are extracted sequentially. The second block 12 of the same size and shape as the extracted first block 11 is extracted from the image data of the (m+n)-th frame 2. The absolute difference value of the corresponding pixels of the extracted first block 11 and the extracted second block 12 is computed every pixel.

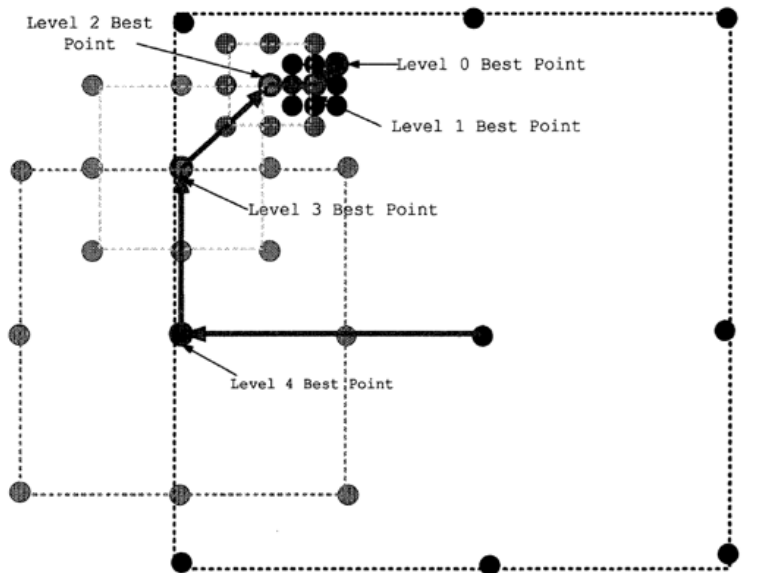
## G06T 7/238

### Definition statement

*This place covers:*

- Non-full, layered structure, fast, adaptive, efficient search
- Three-Step, New Three-Step, Four-Step Search
- Simple and Efficient Search
- Binary Search
- Spiral Search
- Two-Dimensional Logarithmic Search
- Cross Search Algorithm
- Adaptive Rood Pattern Search
- Orthogonal Search
- One-at-a-Time Algorithm
- Diamond Search
- Hierarchical search
- Spatial dependency check

Illustrative example of an hierarchical search:



## Special rules of classification

For Hierarchical, coarse-to-fine, multiscale or multiresolution image processing; Pyramid transform, Indexing Code [G06T 2207/20016](#) should be added.

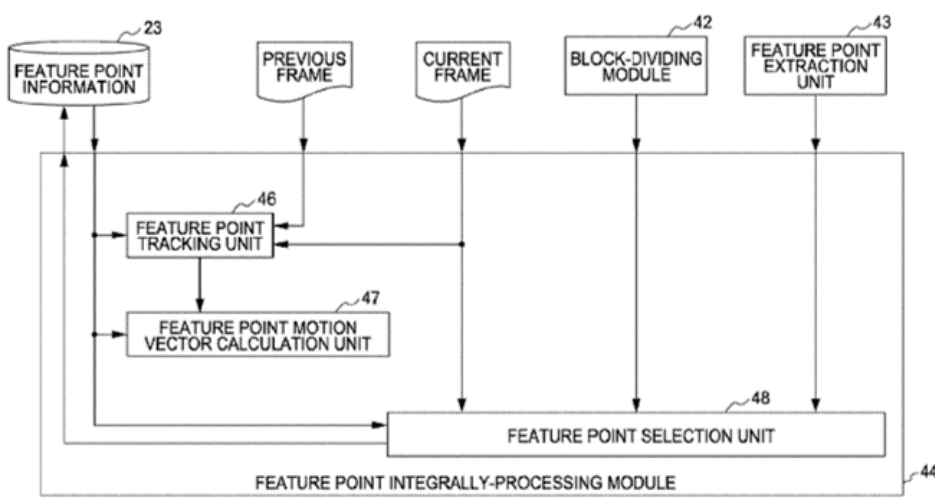
## G06T 7/246

### Definition statement

*This place covers:*

- Feature points, e.g. determined by image operators; also matching of point descriptors, feature vectors; significant segments, blobs
- Feature, landmark, marker, fiducial, edge, corner, etc.

Illustrative example:



### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

Feature	a significant image region or pixel with certain characteristics
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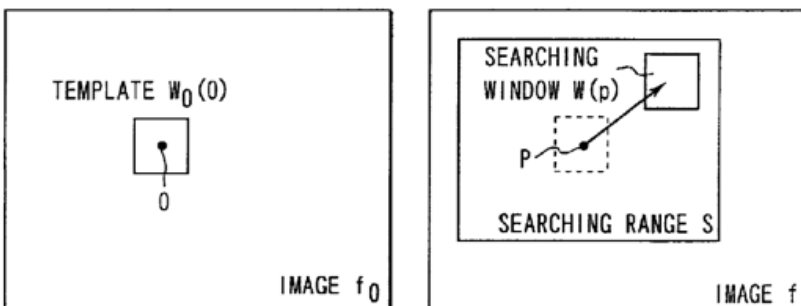
## G06T 7/248

### Definition statement

*This place covers:*

- Involving correlation of "true to reality" image patches, templates, regions of interest
- Correlation used for 1) finding features in each image or for 2) finding regions of interest from one image in the other images

Illustrative example:



### References

#### Application-oriented references

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Face recognition using comparisons between temporally consecutive images	<a href="#">G06K 9/00261</a>
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#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Image matching for pattern recognition or image matching in general	<a href="#">G06K 9/6201</a>
Analysis of motion using block-matching (where blocks are arbitrarily defined by a grid, not as a significant image region)	<a href="#">G06T 7/223</a>



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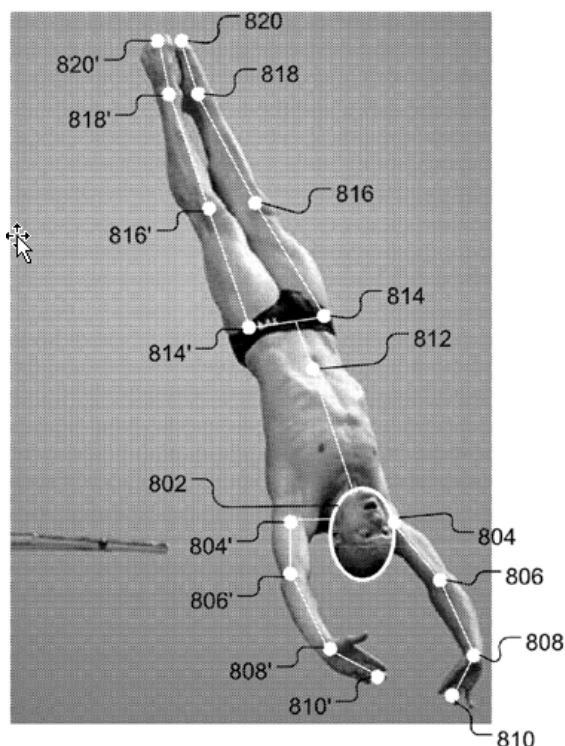
## G06T7/251

### Definition statement

*This place covers:*

- Involving matching of intermediary 2D or 3D models extracted from each image before motion analysis, e.g. skeletons, stick models, ellipses, geometric models of all kinds, polygon models, active appearance and shape models, as opposed to reference images or patches
- Model matching used for 1) finding features in each image or for 2) finding structure of interest from one image in the other images

Illustrative example:



For each frame of a captured video sequence, a basic human body model 800 for diving competitions is superimposed on the frame and adjusted to provide an accurate representation of the diver's positioning in that frame, the sequence of adjusted models describing the entire motion sequence of the diver.

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## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Matching of contours in general or matching of contours for pattern recognition	<a href="#">G06K 9/6204</a>
Syntactic or structural pattern recognition, e.g. symbolic string recognition	<a href="#">G06K 9/6878</a>

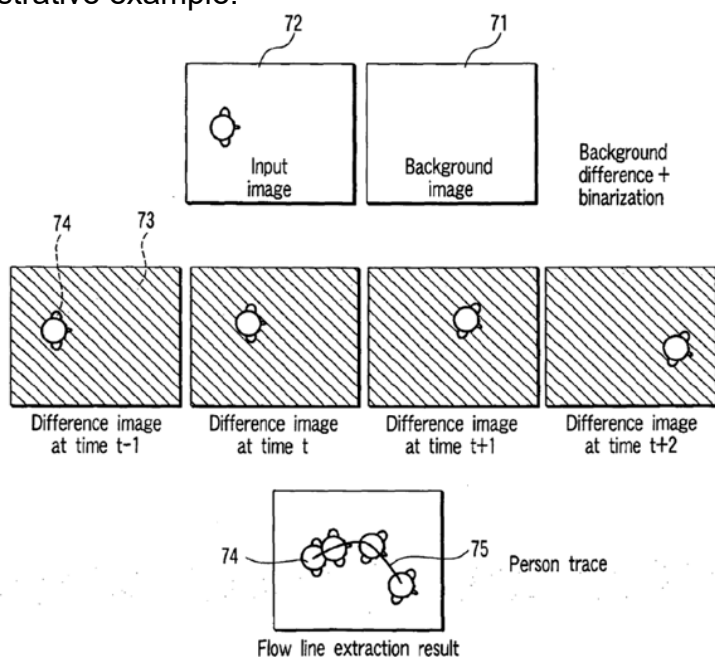
## G06T 7/254

### Definition statement

This place covers:

- Subtraction of previous image
- Subtraction of background image, background maintenance, background models therefor
- Also involving ratio or more general comparison of corresponding pixels in successive frames

Illustrative example:



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## References

### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Burglar, theft or intruder alarms using cameras and image comparison	<a href="#">G08B 13/196</a>
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### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Change detection in biomedical image inspection	<a href="#">G06T 7/0014</a>
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## G06T 7/262

### Definition statement

*This place covers:*

- Fourier, DCT, Wavelet, Gabor, etc.
- Using phase correlation

Illustrative examples:

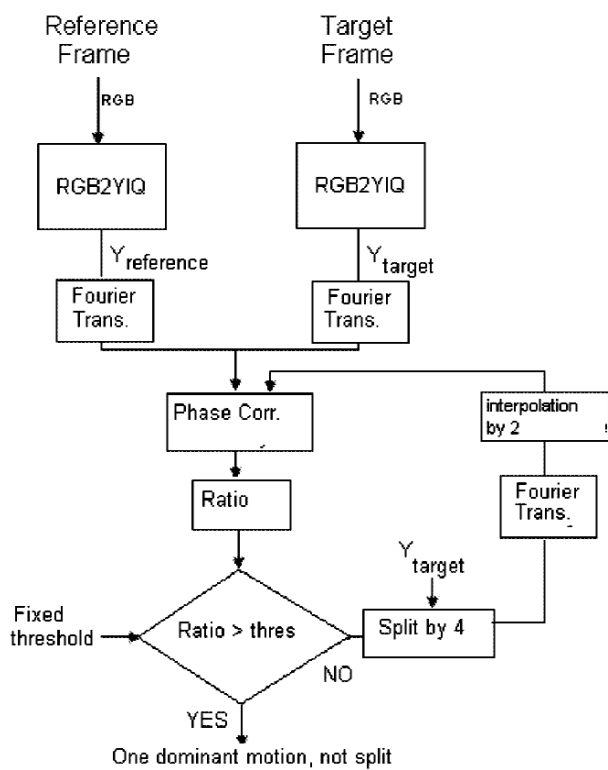


Figure 1.

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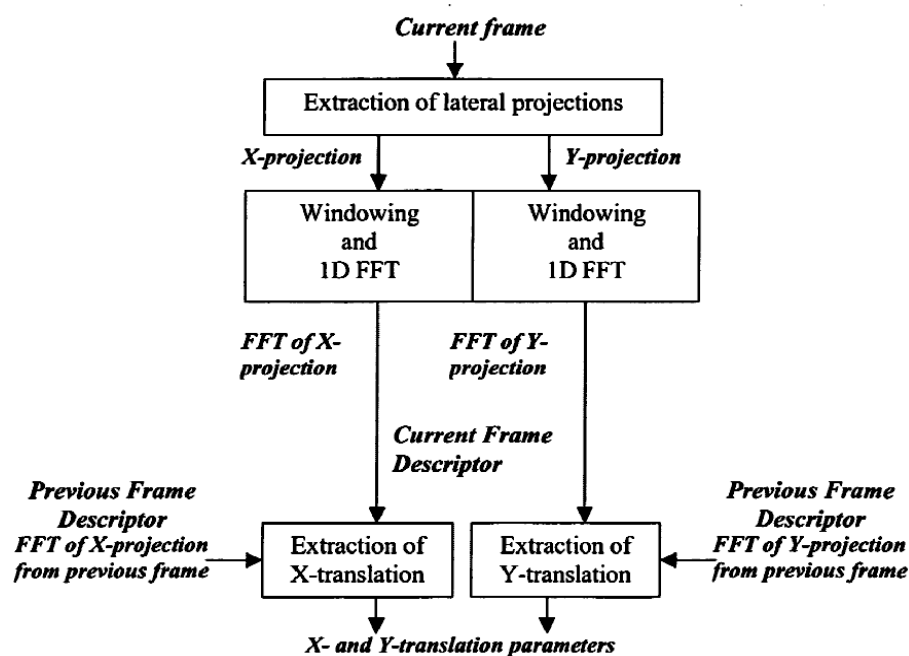


Figure 2.

## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

Detecting partial patterns using Hough transform for pattern recognition	<a href="#">G06K 9/4633</a>
Feature extraction by deriving mathematical or geometrical properties, frequency domain transformations, for pattern recognition	<a href="#">G06K 9/522</a>
Feature extraction by deriving mathematical or geometrical properties, scale-space transformation, e.g. wavelet transform, for pattern recognition	<a href="#">G06K 9/527</a>

### Special rules of classification

For Transform domain processing, an Indexing Code from the range of [G06T2207/20052](#) to [G06T2207/20064](#) should be added.

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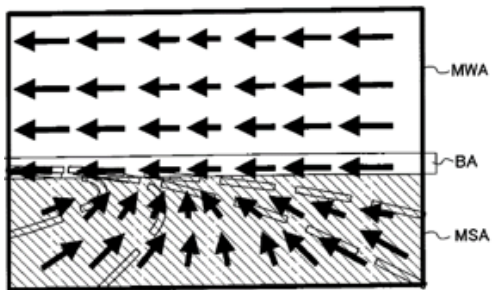
## G06T 7/269

### Definition statement

*This place covers:*

Optic (optical) flow involving the calculation of spatial and temporal gradient

Illustrative example:



## G06T 7/277

### Definition statement

This place covers:

- Bayesian methods
- HMM
- Particle filtering

Illustrative examples:

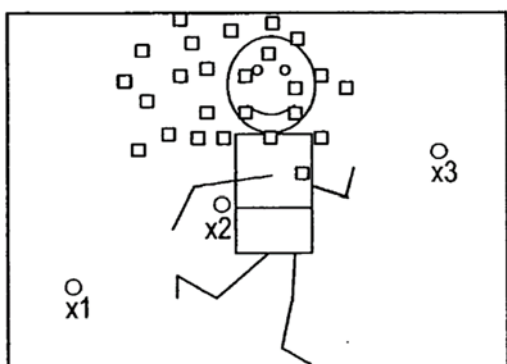


Figure 1.

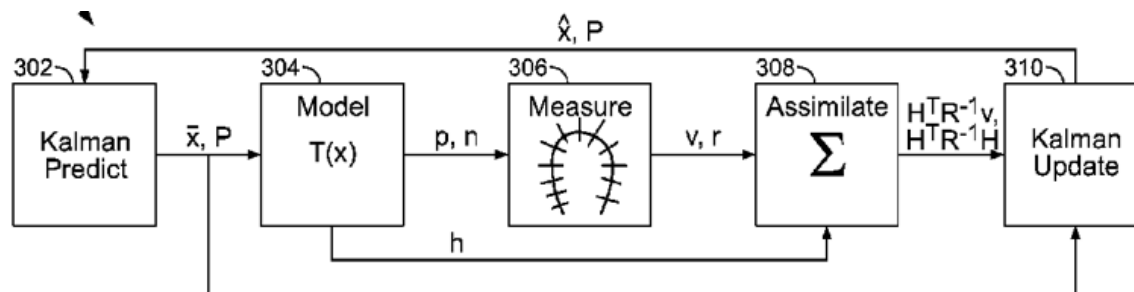


Figure 2. Kalman filter-based tracking of 3D heart model

### Special rules of classification

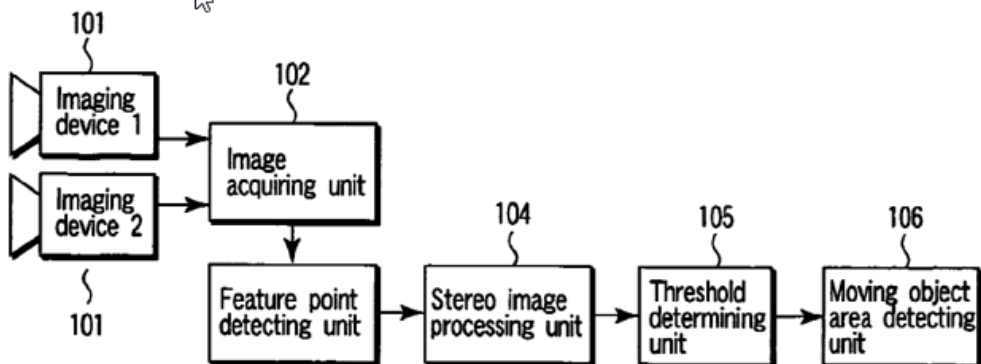
Whenever possible, documents classified herein should also be classified in one of the other subgroups of G06T 7/20.

## G06T 7/285

### Definition statement

*This place covers:*

Illustrative example:





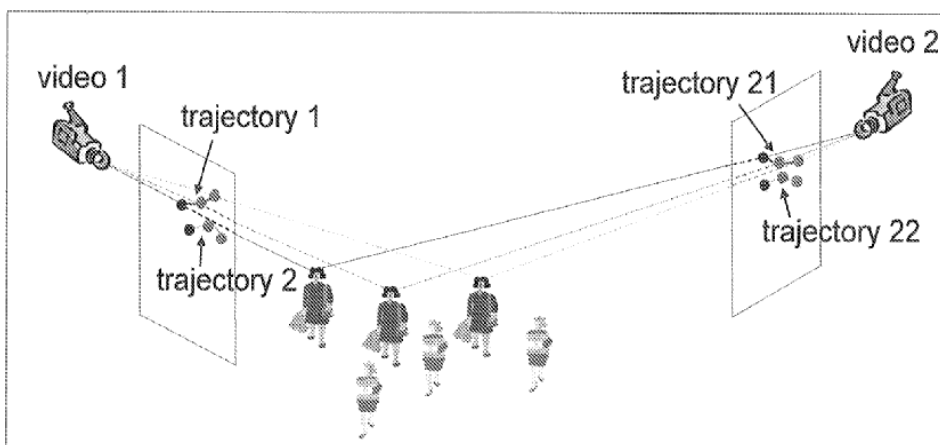
## G06T 7/292

### Definition statement

*This place covers:*

- Algorithms for camera networks
- Interaction, cooperation between trackers
- Multi-view tracking, multi-camera tracking
- The cameras view the same scene (cooperation, e.g. by voting, fusion)
- The cameras view different scenes (cooperation, e.g. by handover, tracklet joining, trajectory joining)

Illustrative example:



### References

#### **Application-oriented references**

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

<p>Classification of unknown faces, i.e. recognising the same non-enrolled faces, e.g. recognising the unknown faces across different face tracks</p>	<p><a href="#">G06K 9/00295</a></p>
---	-------------------------------------

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**Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

Analysis of motion using a sequence of stereo pairs, e.g. cooperative motion analysis from a single stereo camera pair or motion analysis from at least three views, wherein at least one pair of views is processed as stereo pair	<a href="#">G06T 7/285</a>
---	----------------------------

**Special rules of classification**

Whenever possible, documents classified herein should also be classified in one of the other subgroups of [G06T 7/20](#).

In particular, in the case of motion analysis from multiple monocular views with subsequent merging or joining of analysis results, details about the respective analysis algorithm per view should be classified in the subgroups of [G06T 7/20](#) as well.

**Glossary of terms**

*In this place, the following terms or expressions are used with the meaning indicated:*

Multi-camera	Treatment of multiple image sequences, not in a pairwise manner
Stereo	Treatment of two images, e.g. from two cameras or a single camera that is displaced, in a pairwise manner

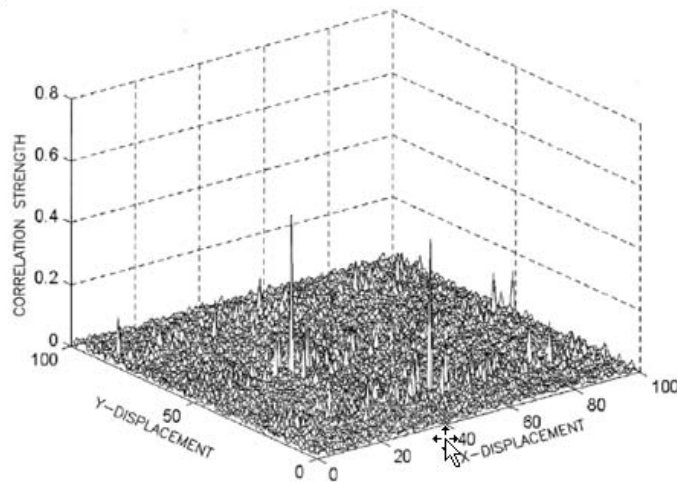
## G06T 7/32

### Definition statement

*This place covers:*

- Global correlation
- Block-matching like correlation, if not for motion analysis

*Illustrative example:*



### References

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Analysis of motion using block-matching
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<a href="#">G06T 7/223</a>
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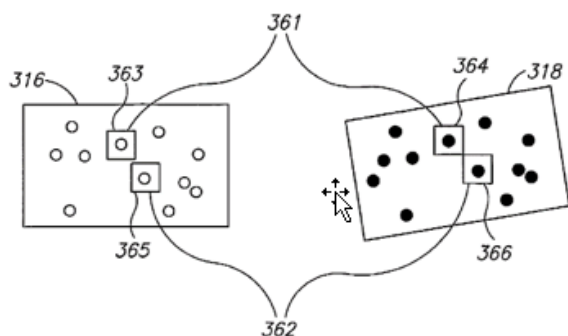
## G06T 7/33

### Definition statement

*This place covers:*

- Feature points, e.g. determined by image operators; also matching of point descriptors, feature vectors; significant segments, blobs
- Feature, landmark, marker, fiducial, edge, corner, etc.

*Illustrative example:*



### References

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Extraction of features or characteristics of the image, for pattern recognition	<a href="#">G06K 9/46</a>
---	---------------------------

### Glossary of terms

*In this place, the following terms or expressions are used with the meaning indicated:*

Feature	significant image region or pixel with certain characteristics
---------	--

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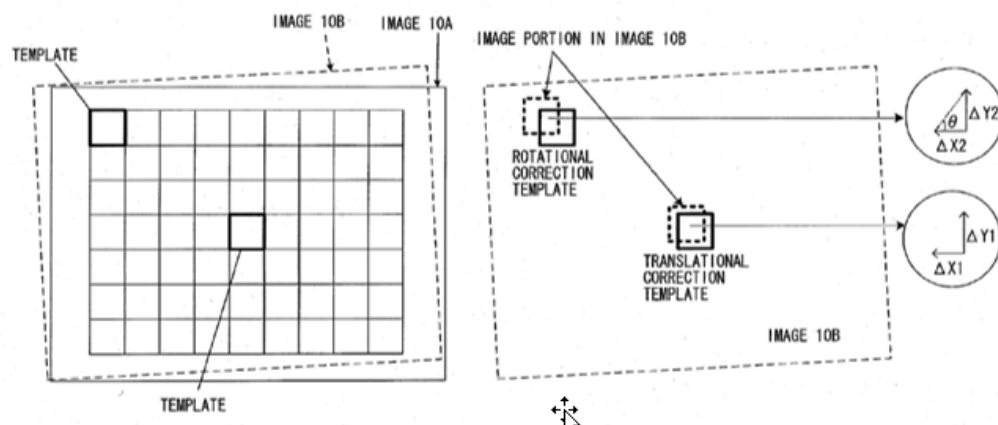
## G06T 7/337

### Definition statement

*This place covers:*

Involving correlation with "true to reality" image patches, templates, regions of interest; correlation used for 1) finding features in each image, or for 2) finding regions of interest from one image in the other image.

Illustrative example:



### References

#### Informative references

Attention is drawn to the following places, which may be of interest for search:

Image matching for pattern recognition or image matching in general	<a href="#">G06K 9/6201</a>
Image registration using correlation of complete images or block-matching-like registration (where blocks are arbitrarily defined by a grid, not as a significant image region, region of interest)	<a href="#">G06T 7/32</a>

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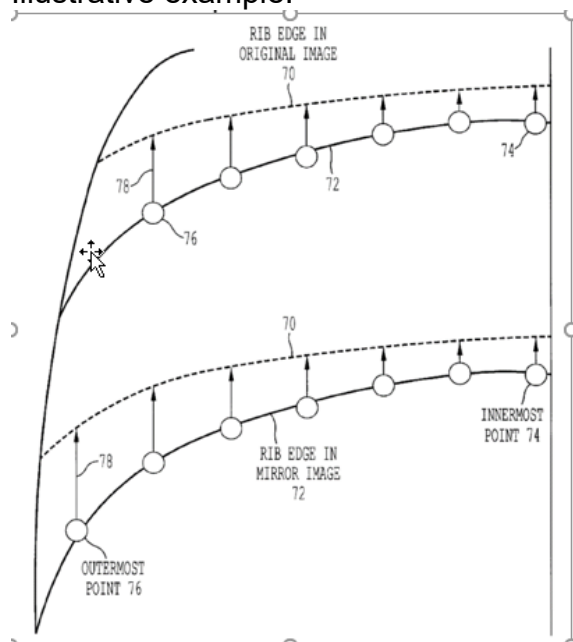
## G06T 7/344

### Definition statement

*This place covers:*

- Involving matching of intermediary 2D or 3D models extracted from each image before registration, e.g. geometric models of all kinds, polygon models, active appearance and shape models, as opposed to reference images or patches
- Corresponding models are adapted to each image to be registered, respectively, transform parameters between the images are determined from a comparison/matching of the adapted models
- Model matching used for 1) finding features in each image, or for 2) finding structure of interest from one image in the other image

Illustrative example:



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## References

### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Matching of contours	<a href="#">G06K 9/6204</a>
Syntactic or structural pattern recognition, e.g. symbolic string recognition	<a href="#">G06K 9/6878</a>

## G06T 7/35

### Definition statement

*This place covers:*

- Involving probabilistic feature points, statistical features or reference images / patches, statistical models, statistical matching
- Approaches based on mutual information
- RANSAC

## References

### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Matching configurations of points or features for pattern recognition, e.g. using RANSAC	<a href="#">G06K 9/6211</a>
Image matching by comparing statistics of regions for pattern recognition	<a href="#">G06K 9/6212</a>

### Special rules of classification

Whenever possible, documents classified herein should also be classified in one of the other subgroups of [G06T 7/30](#).

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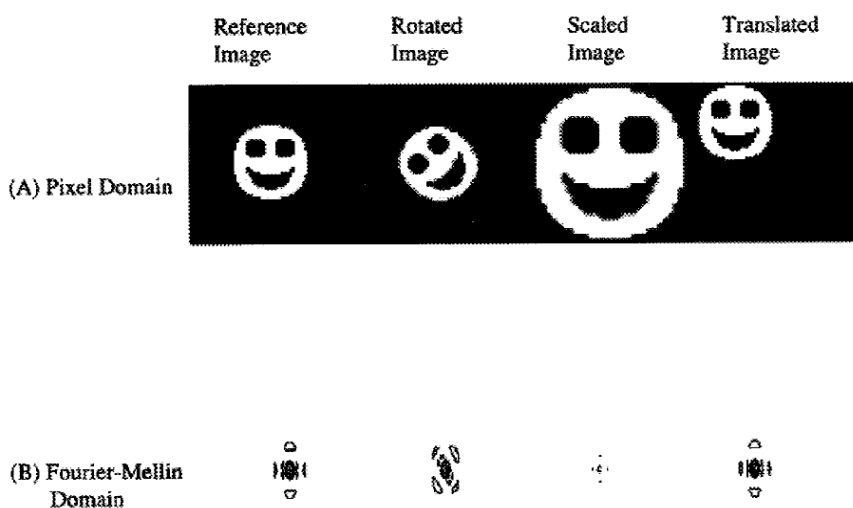
## G06T 7/37

### Definition statement

*This place covers:*

Fourier, DCT, Wavelet, Gabor, etc.

Illustrative example:



### References

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Detecting partial patterns using transforms (e.g. Hough transform) for pattern recognition	<a href="#">G06K 9/4633</a>
Feature extraction by deriving mathematical or geometrical properties, frequency domain transformations, for pattern recognition	<a href="#">G06K 9/522</a>
Feature extraction by deriving mathematical or geometrical properties, scale-space transformation, e.g. wavelet transform, for pattern recognition	<a href="#">G06K 9/527</a>



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## Special rules of classification

For Transform domain processing, an Indexing Code from the range of [G06T2207/20052](#) to [G06T2207/20064](#) should be added.

## G06T 7/38

### Definition statement

*This place covers:*

- Aligning one image sequence or image set to the other, i.e. finding spatially or temporally corresponding frames between one image sequence and the other (inter-sequence alignment), as opposed to spatial alignment of image frames within a single image sequence (intra-sequence alignment)
- Temporal alignment = alignment along the t-axis, e.g. alignment of two video sequences
- Spatial alignment = alignment along the z-axis, e.g. alignment of two stacks of CT slices
- Additionally, spatially aligning the temporally or spatially corresponding frames in the x-y-plane (intra-sequence alignment) is possible
- Source sequences can be of any orientation

Illustrative examples:

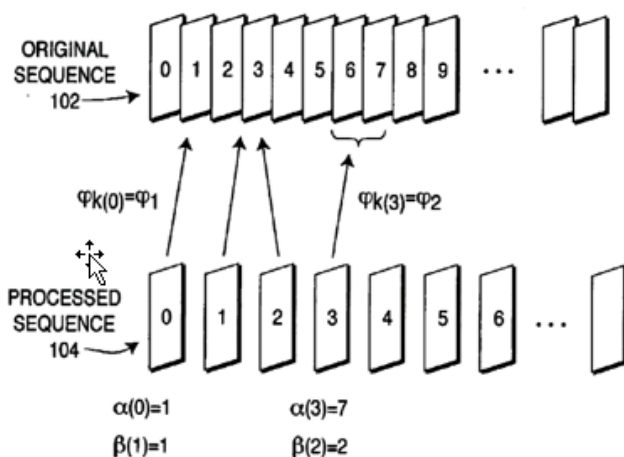


Figure 1. Spatial alignment

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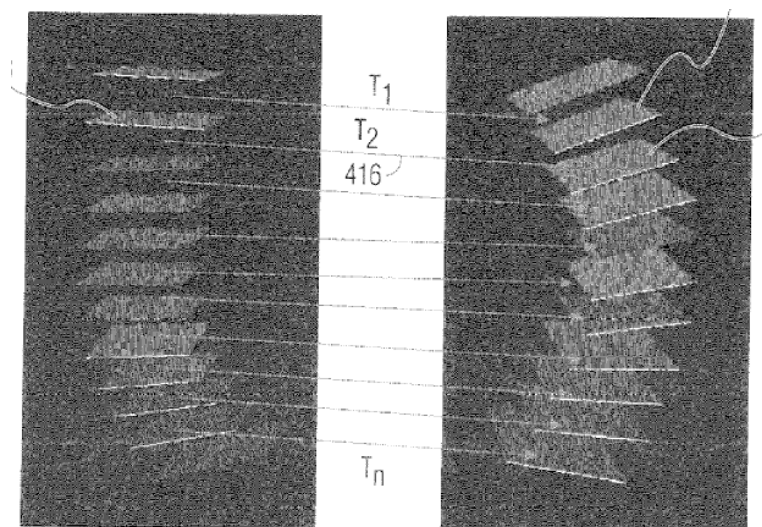


Figure 2.

## References

### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Document matching for pattern recognition	<a href="#">G06K 9/00483</a>
Matching video sequences for pattern recognition	<a href="#">G06K 9/00758</a>

### Special rules of classification

Whenever possible, documents classified herein should also be classified in one of the other subgroups of [G06T 7/30](#).

## G06T 7/41

### Definition statement

*This place covers:*

Analysis of texture using:

- First-order statistics
- Global histogram-based measures: mean, variance, skewness, kurtosis, energy, entropy
- Autocorrelation
- Run-length based algorithms

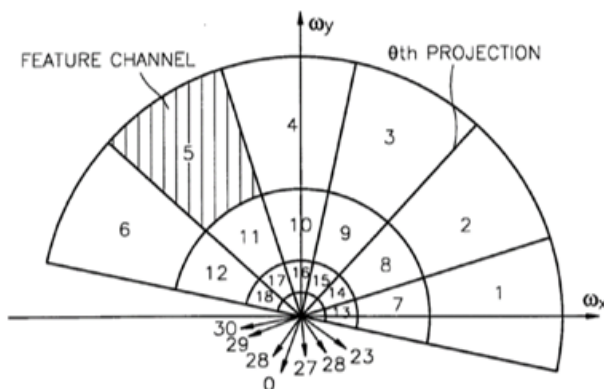
## G06T 7/42

### Definition statement

*This place covers:*

Fourier, DCT, Wavelet, Gabor, etc.

Illustrative example:



Texture-based image retrieval method using a Gabor filter in the frequency domain, wherein the frequency domain representation is divided according to a predetermined layout for extracting texture descriptors of respective feature channels.

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## References

### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Detecting partial patterns using transforms (e.g. Hough transform), for pattern recognition	<a href="#">G06K 9/4633</a>
Feature extraction by deriving mathematical or geometrical properties, frequency domain transformations, for pattern recognition	<a href="#">G06K 9/522</a>
Feature extraction by deriving mathematical or geometrical properties, scale-space transformation, e.g. wavelet transform, for pattern recognition	<a href="#">G06K 9/527</a>

### Special rules of classification

For Transform domain processing, an Indexing Code from the range of [G06T2207/20052](#) to [G06T2207/20064](#) should be added.

## G06T 7/44

### Definition statement

*This place covers:*

- Laws texture energy measure
- Texture analysis using edge operators
- Texture analysis using difference of Gaussians
- Texture analysis using local linear transforms
- Local Binary Pattern [LBP]
- Grey level difference method
- Local rank order correlation

## **G06T 7/45**

### **Definition statement**

*This place covers:*

- Second-order statistics
- Generalised co-occurrence matrix

## **G06T 7/46**

### **Definition statement**

*This place covers:*

- Markov Random Fields, Gaussian Random Fields, Gibbs Random Fields
- Autoregressive Model

## **G06T 7/48**

### **Definition statement**

*This place covers:*

- fractal texture analysis methods
- fractal dimension
- box counting methods

## G06T 7/49

### Definition statement

*This place covers:*

- Shape chain grammars, graph grammars
- Grouping of primitives in hierarchical textures

Illustrative example:

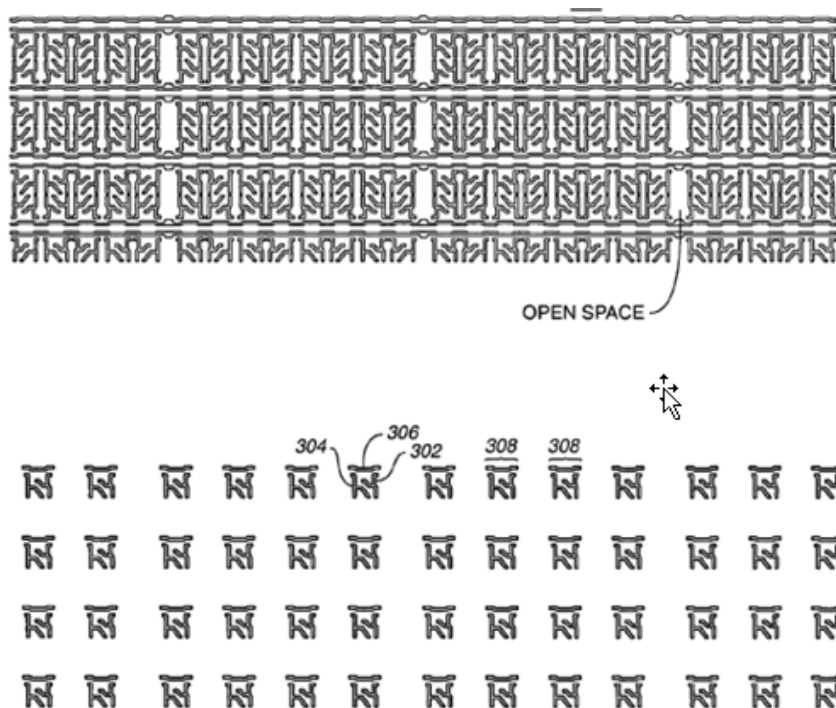


Figure 1 (top) and 2 (bottom). Method for finding periodic structures in a layer of an integrated circuit that have identical optical properties. Fig. 2 illustrates a geometric hierarchy of the periodic elements in the cell layer of Fig. 1.

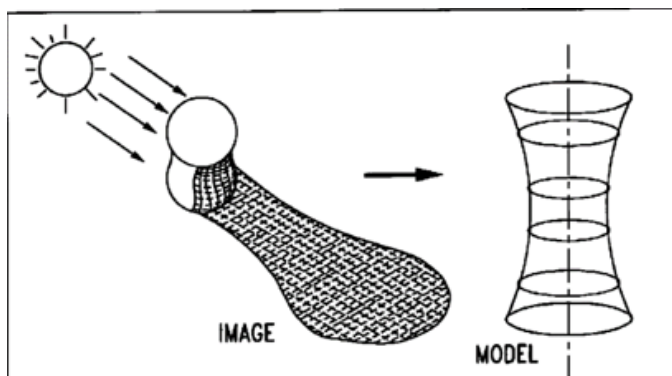
## G06T 7/507

### Definition statement

*This place covers:*

Shape from shading or shadows

*Illustrative example:*



### References

#### *Limiting references*

*This place does not cover:*

Depth or shape recovery from multiple light sources, e.g. photometric stereo
--

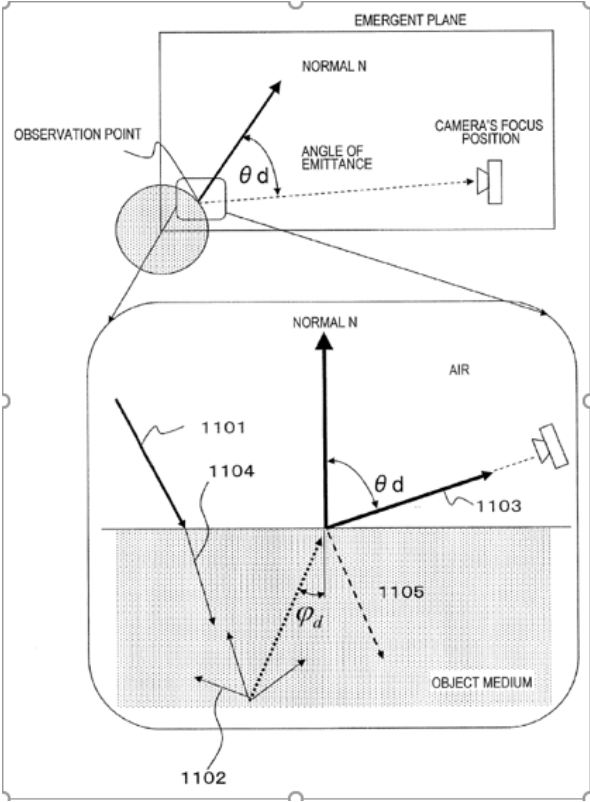
<a href="#">G06T 7/586</a>
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**G06T 7/514**

**Definition statement**

*This place covers:*

Illustrative example:





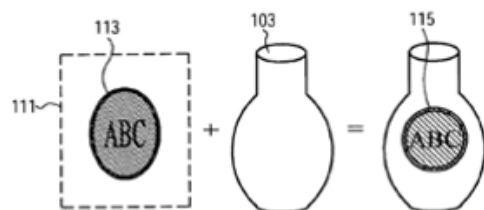
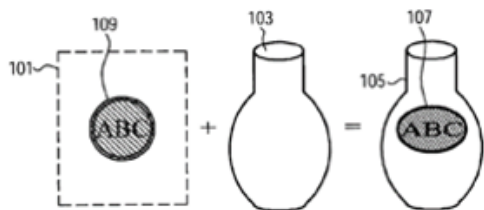
## G06T 7/529

### Definition statement

*This place covers:*

- *shape from texture*
- *shape from blur in a single image*

*Illustrative example:*



### References

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Depth or shape recovery from focus
------------------------------------

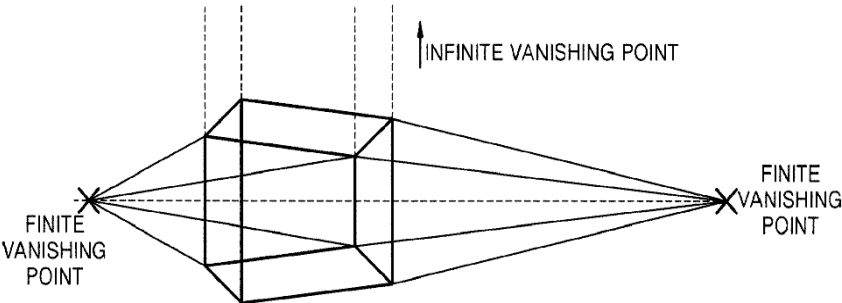
<a href="#">G06T 7/571</a>
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**G06T 7/536**

**Definition statement**

*This place covers:*

Illustrative example:



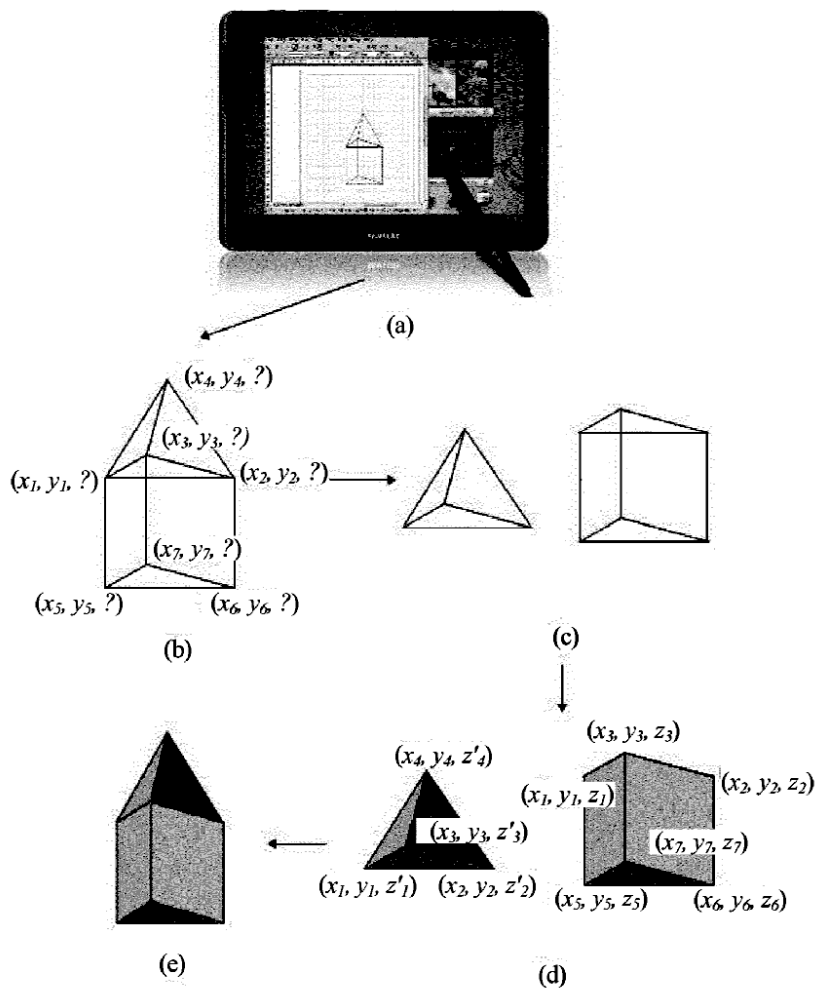
## G06T 7/543

### Definition statement

*This place covers:*

- shape from line drawings
- shape from contours in a single image

Illustrative example:



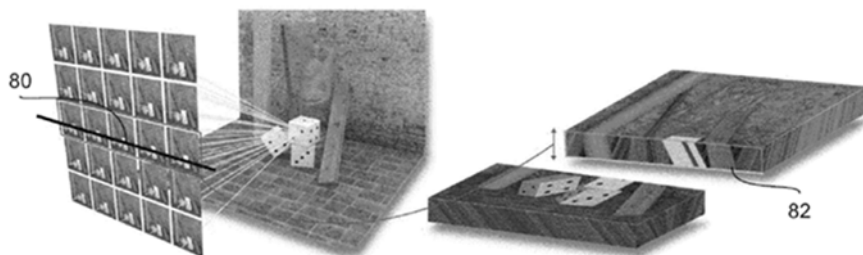
## G06T 7/557

### Definition statement

*This place covers:*

Depth reconstruction using, or based on, light field representations, i.e. 5D plenoptic function, 4D light field, lumigraph, ray space; such light field representations may originate, e.g. from plenoptic cameras, light field cameras, cameras with a lenslet array or integral imaging.

Illustrative example:



### References

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Depth from focus	<a href="#">G06T 7/571</a>
Depth from motion	<a href="#">G06T 7/579</a>
Depth from multiple light sources	<a href="#">G06T 7/586</a>
Depth from stereo images	<a href="#">G06T 7/593</a>
Depth using trinocular vision calculations/trifocal tensor	<a href="#">G06T 7/55,</a> <a href="#">G06T 2207/20088</a>

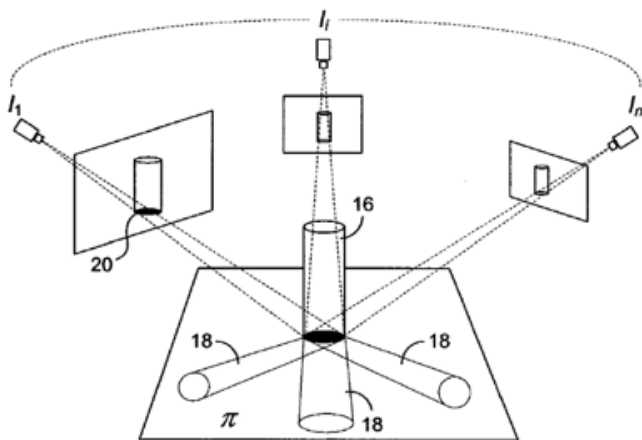
## G06T 7/564

### Definition statement

*This place covers:*

- Shape from contours
- Shape from silhouettes
- Shape from visual hulls

Illustrative example:



### References

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Depth or shape recovery from line drawings, e.g. shape from contours involving one image only	<a href="#">G06T 7/543</a>
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## G06T 7/571

### Definition statement

*This place covers:*

- Shape from focus
- Shape from defocus of multiple images

Illustrative examples:

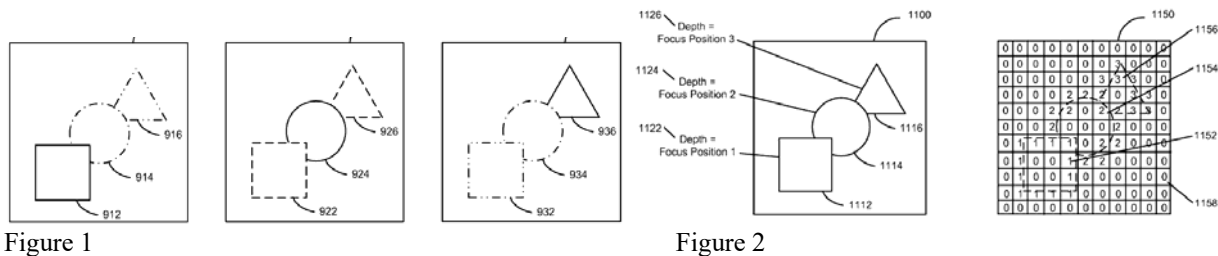


Figure 1 and 2. Input image sequence and resulting depth map

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Systems for automatic generation of focusing signals	<a href="#">G02B 7/28</a>
Focusing aids for cameras; Autofocus systems for cameras	<a href="#">G03B 13/00</a>
Shape from texture, e.g. shape from blur in a single image	<a href="#">G06T 7/529</a>

## G06T 7/579

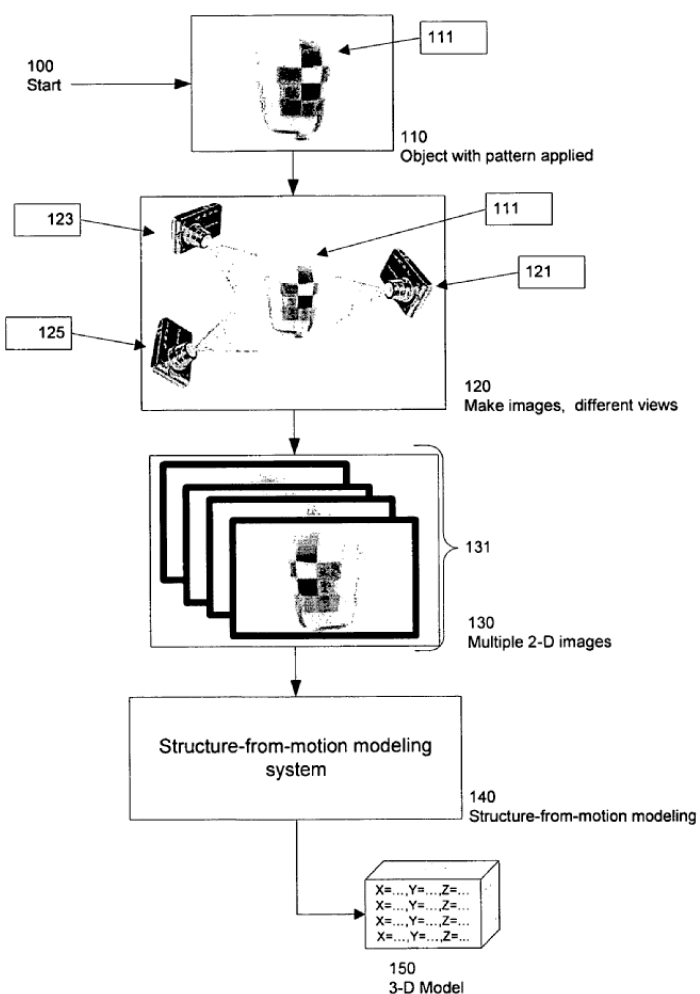
### Definition statement

*This place covers:*

- Shape from motion, structure from motion
- Extracting the shape of a scene from the spatial and temporal changes occurring in an image sequence (camera or scene moves)
- Simultaneous Localisation and Mapping [SLAM]

Illustrative examples:

Figure 1



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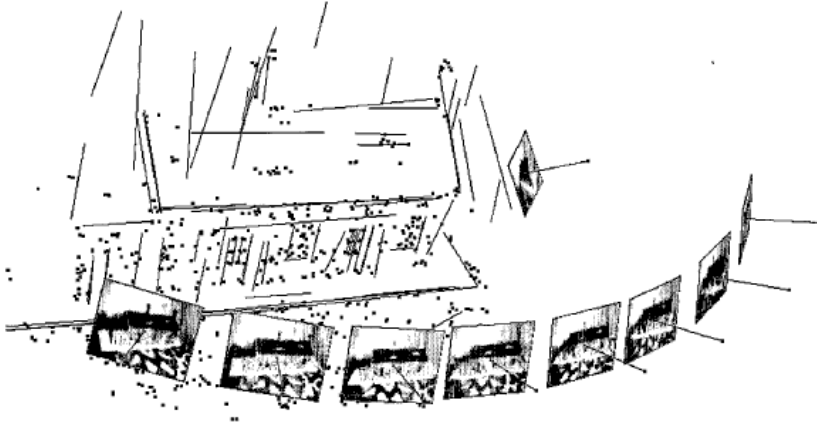


Figure 2. Shape from motion reconstruction

### ***Informative references***

*Attention is drawn to the following places, which may be of interest for search:*

Determining position or orientation of objects or cameras	<a href="#">G06T 7/70</a>
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### **Special rules of classification**

For Camera pose, Indexing Code [G06T 2207/30244](#) should be added.



## G06T 7/596

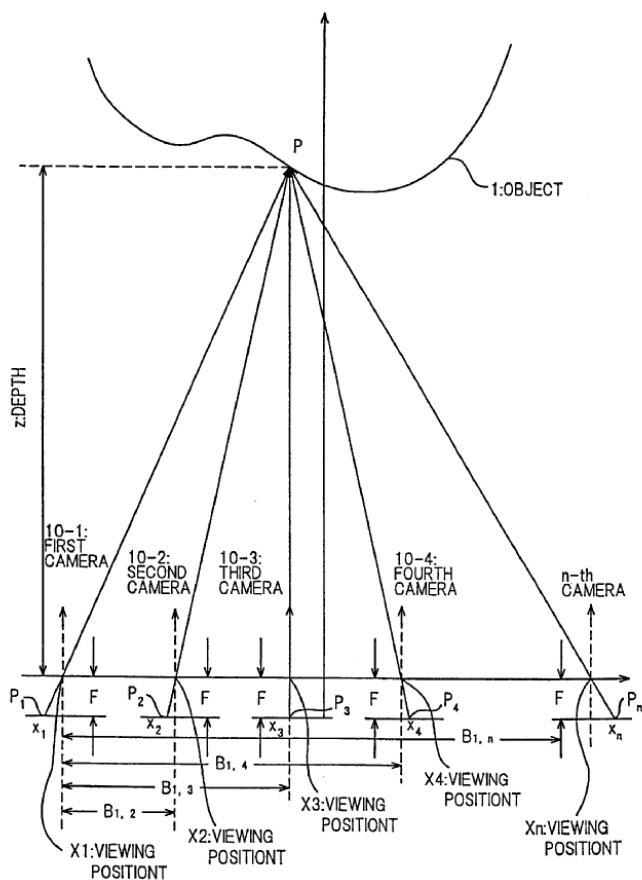
### Definition statement

*This place covers:*

Multi-baseline stereo (special case only where

- each view is always treated together with the same reference view and
- the lengths of the respective baselines differ from each other)

Illustrative example:

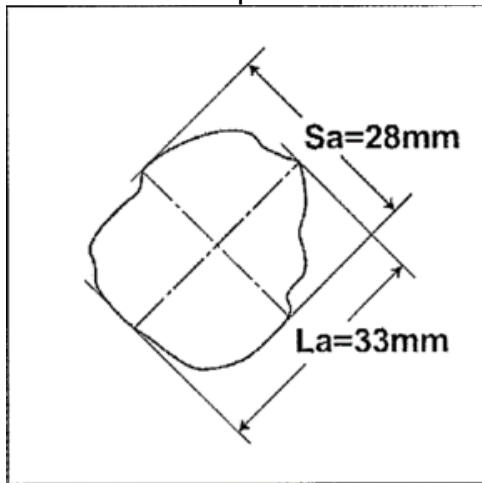


## G06T 7/62

### Definition statement

*This place covers:*

Illustrative example:



## G06T 7/64

### Definition statement

*This place covers:*

Convexity, concavity, curvature, circularity, sphericity, roundness

Illustrative examples:

Figure 1

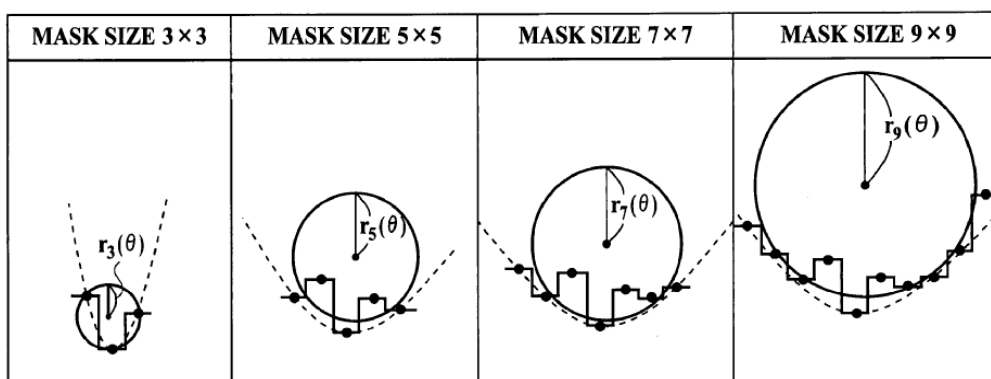
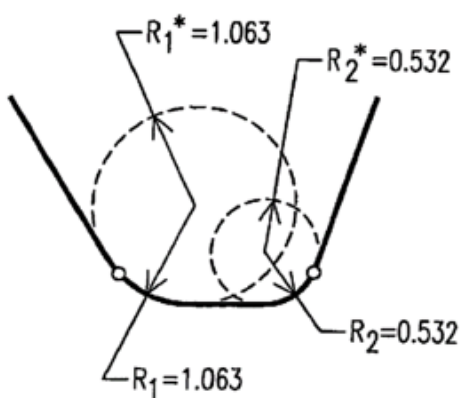


Figure 2



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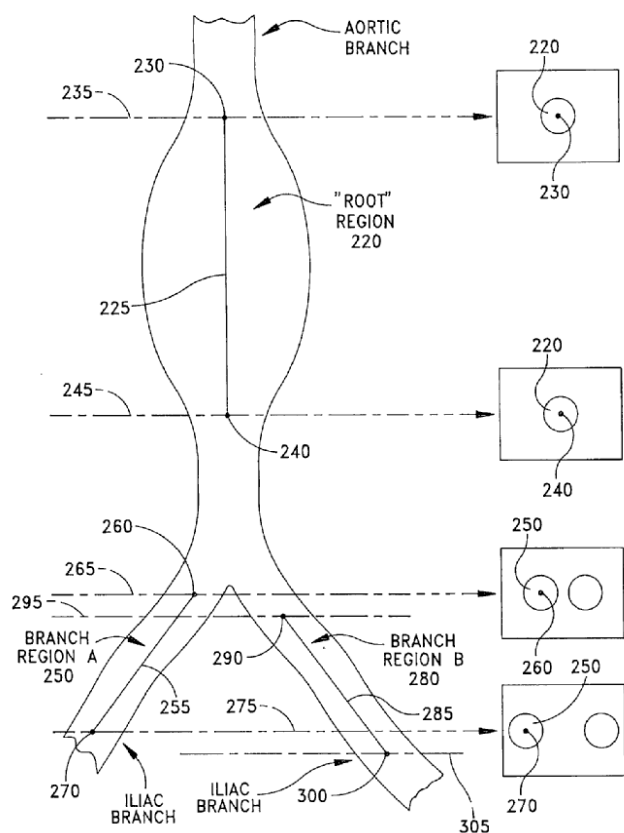
## G06T 7/66

### Definition statement

*This place covers:*

Following centers of gravity of sections along elongated or tubular structure

Illustrative example:



### References

#### Application-oriented references

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Computation of moments, for pattern recognition	G06K 9/525
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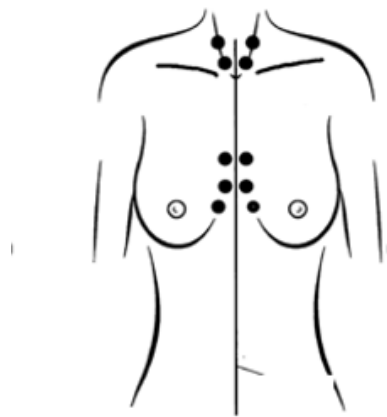
## G06T 7/68

### Definition statement

*This place covers:*

- Determination of lines of symmetry, midlines
- Measurement of symmetry and asymmetry

Illustrative example:





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## G06T 7/74

### Definition statement

*This place covers:*

Involving correlation with "true to reality" reference images, templates of various poses; for "directly" determining pose; correlation with "true to reality" templates of landmarks, markers, fiducials; for finding features in the image.

Illustrative examples:

Figure 1

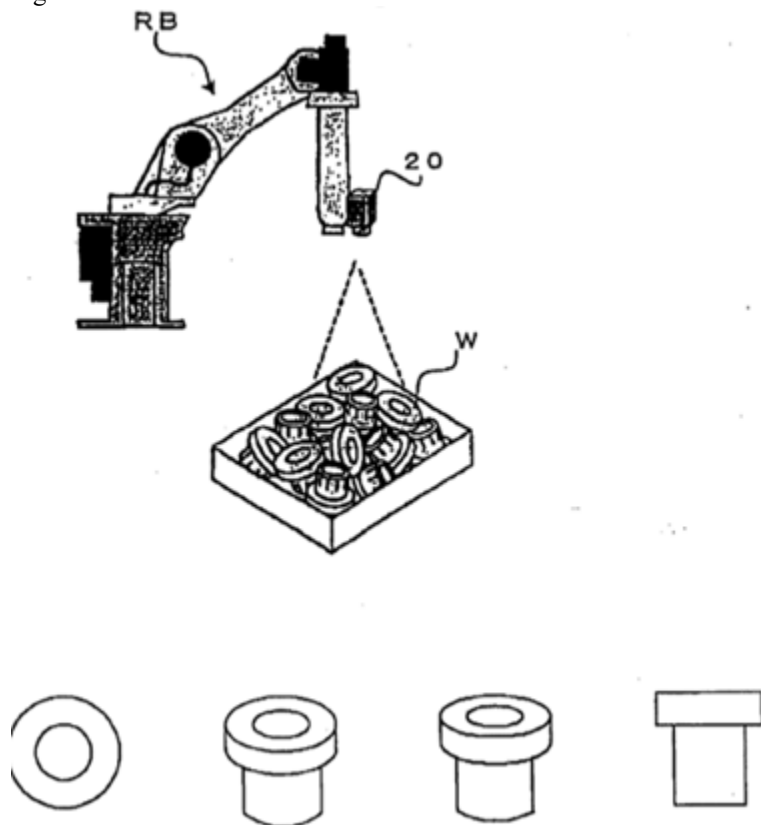
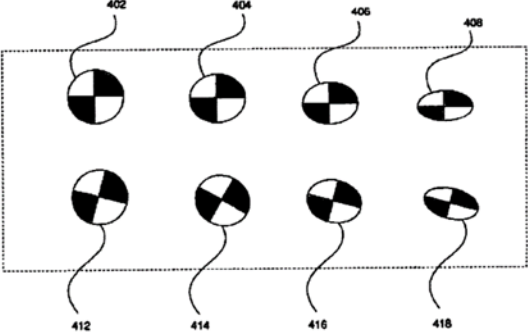


Figure 2



**References**

***Informative references***

*Attention is drawn to the following places, which may be of interest for search:*

Image matching for pattern recognition or image matching in general	<a href="#">G06K 9/6201</a>
---	-----------------------------



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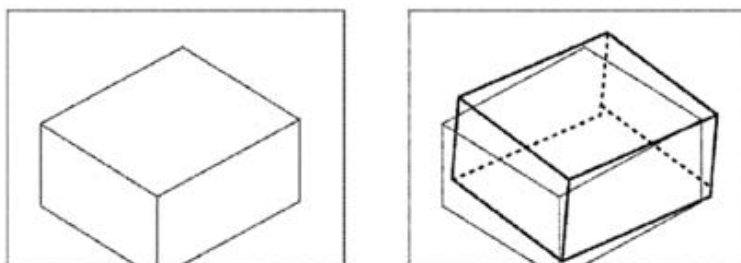
## G06T 7/75

### Definition statement

*This place covers:*

- Involving matching to a 2D or 3D model, e.g. geometric models of all kinds, polygon models, active appearance and shape models, also abstract models of landmarks, markers, fiducials with spatial extent, as opposed to reference images or patches
- Matching of a graphical, e.g. polygon model, may involve intermediate rendering of the model
- Model matching used for 1) finding features in each image, or for 2) "directly" determining pose of structure of interest

Illustrative example:



### References

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Syntactic or structural pattern recognition, e.g. symbolic string recognition	<a href="#">G06K 9/6878</a>
Matching of contours	<a href="#">G06K 9/6204</a>
Segmentation involving deformable models	<a href="#">G06T 7/149</a>
Analysis of motion involving models	<a href="#">G06T 7/251</a>

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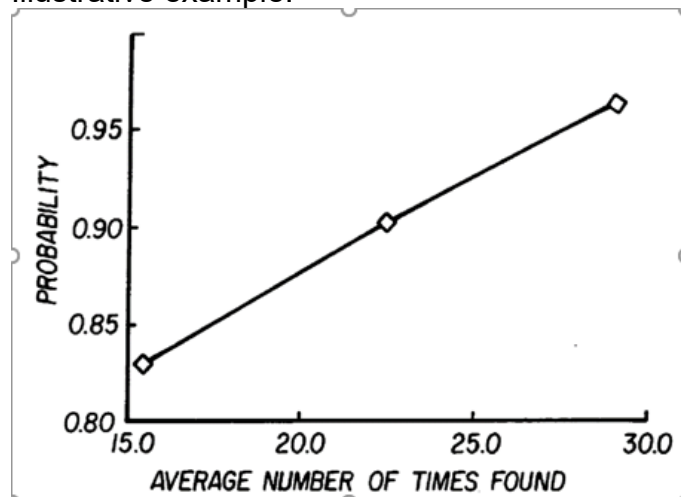
## G06T 7/77

### Definition statement

*This place covers:*

- Involving probabilistic feature points, statistical models, statistics of positions
- Features, reference images, patches or method itself can be statistical
- RANSAC

Illustrative example:



### References

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Image matching by comparing statistics of regions for pattern recognition	<a href="#">G06K 9/6212</a>
Segmentation or edge detection involving probabilistic approaches	<a href="#">G06T 7/143</a>
Analysis of motion involving a stochastic approach	<a href="#">G06T 7/277</a>

## Special rules of classification

Whenever possible, documents classified herein should also be classified in one of the other subgroups of [G06T 7/70](#).

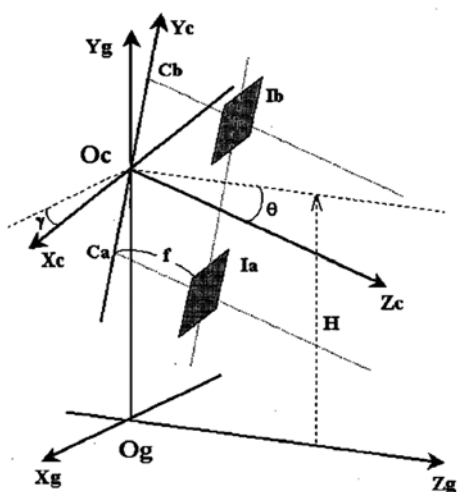
## G06T 7/85

### Definition statement

*This place covers:*

Camera calibration for stereoscopic cameras, e.g. for determining the transformation between left camera coordinate system and right camera coordinate system

Illustrative example:



## References

### Application-oriented references

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Calibration aspects relating to the control of a stereoscopic camera	<a href="#">H04N 13/246</a>
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## G06 T7/90

### Definition statement

*This place covers:*

- Determining colour characteristics by image analysis
- Redeye detection

### References

#### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Acquiring or recognising eyes, e.g. iris verification	<a href="#">G06K 9/00597</a>
Colour image segmentation	<a href="#">G06T 7/10</a>
Retouching, i.e. modification of isolated colours only or in isolated picture areas only	<a href="#">H04N 1/62</a>

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

Correcting redeye defects by retouching or inpainting	<a href="#">G06T 5/005</a>
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### Special rules of classification

For redeye defect, Indexing Code [G06T 2207/30216](#) should be added.

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## G06T 7/97

### Definition statement

*This place covers:*

- Disparity, correspondence, stereopsis, if not provided for elsewhere
- Disparity calculation for the production of 3D images from 2D images without intermediate modelling

### References

#### Limiting references

*This place does not cover:*

Depth or shape recovery from multiple images	<a href="#">G06T 7/55</a>
Stereo camera calibration	<a href="#">G06T 7/85</a>

#### Application-oriented references

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Industrial image inspection using an image reference approach	<a href="#">G06T 7/001</a>
Biomedical image inspection using an image reference approach	<a href="#">G06T 7/0014</a>
Segmentation involving the use of two or more images	<a href="#">G06T 7/174</a>
Computing motion using a sequence of stereo image pairs	<a href="#">G06T 7/285</a>
Determination of transform parameters for the alignment of images, i.e. image registration	<a href="#">G06T 7/30</a>

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

Image-based rendering	<a href="#">G06T15/205</a>
3D from 2D images with intermediate modelling	<a href="#">G06T17/20</a>

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## Special rules of classification

For Disparity calculation for image-based rendering, Indexing Code [G06T 2207/20228](#) should be added.

## G06T 2207/00

### Definition statement

*This place covers:*

Indexing Codes that relate to

- the modality with which the processed image was acquired
- special algorithmic details, also in the sense of further breakdown of groups
- the imaged subject or the context of the image processing

### Special rules of classification

Whenever classifying in [G06T 5/00](#) and [G06T 7/00](#), additional information should be classified using one or more of the Indexing Codes from the range of [G06T 2207/00](#). The use of the Indexing Codes is obligatory.

For Image acquisition modality, see Indexing Code [G06T 2207/10](#).

For Special algorithmic details, see Indexing Code [G06T 2207/20](#).

For Subject of image; Context of image processing, see Indexing Code [G06T 2207/30](#).

For example, the Indexing Codes would be used to classify that a model-based segmentation ([G06T 7/12](#) and [G06T 7/149](#)) using an active shape model ([G06T2207/20124](#)) is done on a CT image ([G06T 2207/10081](#)) of the heart ([G06T2207/30048](#)), or to classify that extrinsic camera parameters ([G06T 7/80](#)) are determined for an infrared camera ([G06T2207/10048](#)) mounted on a car facing to the exterior of the car ([G06T 2207/30252](#)), wherein multiresolution image processing is used ([G06T 2207/20016](#)).

As a basic principle, the Indexing Codes from [G06T 2207/00](#) are applicable *only* in connection with [G06T 5/00](#) and [G06T 7/00](#).

However, not all Indexing Codes are applicable over the whole range of [G06T 5/00](#) and [G06T 7/00](#). The following restrictions apply:

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- The Indexing Codes in the range [G06T 2207/20116](#) - [G06T 2207/20168](#) are applicable only together with [G06T 7/10](#) and subgroups.
- The Indexing Codes in the range [G06T 2207/20182](#) - [G06T 2207/20204](#) are applicable only together with [G06T 5/001](#) and subgroups.
- The Indexing Code [G06T 2207/20228](#) is applicable only together with [G06T7/97](#).

The following Indexing Codes are only used as nodes to build the classification hierarchy and should not contain any documents, i.e. only their subgroups are used for classification:

- [G06T 2207/00](#)
- [G06T 2207/10](#)
- [G06T 2207/10004](#)
- [G06T 2207/10141](#)
- [G06T 2207/20](#)
- [G06T 2207/20024](#)
- [G06T 2207/20112](#)
- [G06T 2207/20172](#)
- [G06T 2207/30](#)

Moreover, the following Indexing Code is considered redundant in the context of image processing and is, thus, not used for classification:

- [G06T 2207/10004](#)

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**G06T 2207/10****Definition statement***This place covers:*

G06T2207/10012	Stereo images - image acquisition by two cameras or a single camera that is displaced acquire at least one stereo image pair
G06T2207/10024	Color image - image acquisition by color or multichannel camera; only to be used when color aspect is of some importance also in the processing
G06T2207/10028	Range image; Depth image; 3D point clouds - range image, depth image, surface image, i.e. 2D image providing depth information; 3D point clouds
G06T2207/10032	Satellite or aerial image; Remote sensing - satellite or aerial imaging; space-based; remote sensing; Fernerkundung (German expression)
G06T2207/10036	Multispectral image; Hyperspectral image - multispectral or hyperspectral radiometers in satellite or aerial imaging
G06T2207/10068	Endoscopic image - image acquisition by endoscopic instrument, e.g. ultrasound catheter, colonoscope, video endoscope, capsule/pill endoscope
G06T2207/10084	Hybrid tomography; Concurrent acquisition with multiple different tomographic modalities - image acquisition by hybrid tomographic scanner, i.e. by system that combines different tomographic modalities
G06T2207/10112	Digital tomosynthesis [DTS] - image from digital tomosynthesis [DTS], i.e. limited angle reconstruction based on radiographies
G06T2207/10124	Digitally reconstructed radiograph [DRR] - DRR reconstructed from 3D tomographic data
G06T2207/10128	Scintigraphy - image acquisition by scintigraphy or gamma camera
G06T2207/10144	Varying exposure - acquisition of multiple images with varying exposure parameters



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G06T2207/10148	Varying focus - modification of focus during acquisition of single image or of multiple images
G06T2207/10152	Varying illumination - acquisition of multiple images with varying illumination conditions

## G06T 2207/20

### Definition statement

*This place covers:*

G06T2207/20008	Globally adaptive - processing of whole image with the same parameters, e.g. the same filter weights, but parameters may vary from image to image
G06T2207/20012	Locally adaptive - processing of image in a locally differing manner; covers also the limiting of processing to a ROI
G06T2207/20081	Training; Learning - training or learning, e.g. of background for motion analysis or of model or atlas for segmentation
G06T2207/20096	Interactive definition of curve of interest - involving interactive definition of non-closed curve of interest; closed curve, see G06T2207/20104
G06T2207/20104	Interactive definition of region of interest [ROI] - involving interactive definition of ROI; setting of closed curve or box
G06T2207/20132	Image cropping - cutting out, cropping, i.e. defining automatically a ROI of simple shape, e.g. rectangular, circular, usually for limiting the further processing to the ROI; this place does not cover manual definition of the ROI: G06T2207/20104
G06T2207/20156	Automatic seed setting - automatic setting of seed, e.g. based on statistics of a region of interest, usually for subsequent region-growing or for edge-growing/following; this place does not cover manual seed-setting: G06T2207/20101

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G06T2207/20164	Salient point detection; Corner detection - detection of salient points, e.g. corners, T-junctions, end points; this place does not cover automatic seed setting: G06T2207/20156; salient points for pattern recognition: G06K9/00
G06T2207/20201	Motion blur correction - correcting motion blur in still image or video
G06T2207/20208	High dynamic range [HDR] image processing; - High Dynamic Range Imaging [HDR or HDRI] from a series of conventional images of lower dynamic range
G06T2207/20216	Image averaging - averaging of multiple images
G06T2207/20221	Image fusion; Image merging - image fusion, i.e. merging of images of same subject
G06T2207/20224	Image subtraction - subtraction of images of same subject, e.g. temporal subtraction, subtraction of images with varying illumination conditions or for masking out certain pre-segmented image parts

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**G06T 2207/30****Definition statement***This place covers:*

G06T2207/30021	Catheter; Guide wire - subject of image: catheter, endoscope or guide wire when imaged in biomedical image
G06T2207/30052	Implant; Prosthesis - subject of image: implant or prosthesis; also non-synthetical transplants
G06T2207/30068	Mammography; Breast - subject of image: mammography; breast, usage not limited to x-ray image
G06T2207/30076	Plethysmography - measurement of possibly periodic volume/size/position changes, e.g. due to blood flow
G06T2207/30101	Blood vessel; Artery; Vein; Vascular - subject of image: vascular structures, blood vessel, artery, vein, angiography
G06T2207/30132	Masonry; Concrete - inspection of concrete or masonry in buildings, dams, bridges, etc.
G06T2207/30144	Printing quality - inspection of printed product
G06T2207/30152	Solder - inspection of solder, electrical contacts
G06T2207/30164	Workpiece; Machine component - inspection of workpiece, e.g. machine component; Werkstück (German expression)
G06T2207/30172	Centreline of tubular or elongated structure - determining the centreline of a tubular or elongated structure, e.g. of a lumen, vessel, colon, pipe
G06T2207/30176	Document - enhancement or analysis of document image; this place does not cover document recognition: G06K9/00
G06T2207/30181	Earth observation - earth observation with image from remote sensing

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G06T2207/30184	Infrastructure - observation of infrastructure, e.g. urban infrastructure, roads, railway, water channel, power transmission line
G06T2207/30188	Vegetation; Agriculture - observation of vegetation areas , e.g. agriculture
G06T2207/30192	Weather; Meteorology - weather, meteorology, climate
G06T2207/30204	Marker - subject of image: artificial marker or symbol in image, e.g. used for calibration, registration or tracking
G06T2207/30212	Military - military application, e.g. target tracking
G06T2207/30216	Redeye defect - redeye defect detection and correction
G06T2207/30232	Surveillance - application in video surveillance
G06T2207/30236	Traffic on road, railway or crossing - subject of image: traffic on road, railway, crossing, square
G06T2207/30241	Trajectory - determination of trajectory, track, trace
G06T2207/30244	Camera pose - determination of camera pose, as opposed to the determination of the pose of image content
G06T2207/30248	Vehicle exterior or interior - imaging with camera placed on a vehicle, car, train, plane, boat or mobile robot
G06T2207/30252	Vehicle exterior; Vicinity of vehicle - subject of image: exterior of a vehicle; imaging from a vehicle
G06T2207/30256	Lane; Road marking - subject of image: lane, road marking, railroad, pathway
G06T2207/30261	Obstacle - subject of image: obstacle, e.g. pedestrian, other vehicle
G06T2207/30264	Parking - imaging from a vehicle, e.g. for parking aid
G06T2207/30268	Vehicle interior - subject of image: interior of a vehicle

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## 2. A. DEFINITIONS (modified)

**Insert:** The following changes into the existing Definitions.

### G06T 7/0002

#### Definition statement

*This place covers:*

**Insert:** The following bullet at the end of the bullet list in the existing Definition statement.

- Image quality inspection

#### References

##### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

**Insert:** The following new references into the Informative references table.

Detection or correction of errors in pattern recognition	<a href="#">G06K 9/03</a>
Evaluation of the quality of the acquired pattern in pattern recognition	<a href="#">G06K 9/036</a>
Image matching for pattern recognition or image matching in general	<a href="#">G06K 9/6201</a>
Clustering techniques for pattern recognition	<a href="#">G06K 9/6218</a>
Classification techniques for pattern recognition	<a href="#">G06K 9/6267</a>
Validation, performance evaluation or active pattern learning techniques	<a href="#">G06K 9/6262</a>

**Delete:** The existing paragraphs (all three) in the *Special rules* section.

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**Insert:** The following new paragraphs in the *Special rules* section.

In relation to the remaining, function-oriented groups of G06T 7/00, this subgroup is an application-oriented group. Therefore, documents classified herein should also be classified in a function-oriented group under G06T 7/00, if they contain a considerable contribution on the respective function.

For image quality inspection G06T 2207/30168 (Image quality inspection) should be added.

## G06T 7/0004

### Definition statement

*This place covers:*

**Replace:** The existing bullets in the *Definition statement* section with the following new bullets:

- Quality, conformity control in industrial context
- Defects, abnormality in industrial context
- Acceptability determination in industrial context
- User interfaces for automated visual inspection in industrial context
- "Teaching" (macros for inspection algorithms)
- Database-to-object inspection in industrial context
- Printing quality

**Insert:** The following new references section and table with the new reference.

### References

#### Application-oriented references

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

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Investigating the presence of flaws or contamination on materials	<a href="#">G01N 21/88</a>
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**Informative references**

Attention is drawn to the following places, which may be of interest for search:

**Delete:** The following reference from the *Informative references* table.

Investigating the presence of flaws or contamination on materials	<a href="#">G01N 21/88</a>
---	----------------------------

**Insert:** The following new *Special rules of classification* section and new paragraphs.

**Special rules of classification**

When classifying in this group, the use of the indexing scheme [G06T 2207/30108 - G06T 2207/30164](#) is mandatory for additional information related to industrial image inspection.

For user interfaces for automated visual inspection in industrial context, Indexing code [G06T 2200/24](#) (involving graphical user interfaces [GUIs]) should be added.

**G06T 7/0006****Definition statement**

*This place covers:*

**Delete:** The following 2<sup>nd</sup> and 3<sup>rd</sup> paragraphs, caption Fig. 21, and figure in the *Definition statement* section.

Illustrative examples: L. Onural and S. H. Oguz: "An Automated System for Design-Rule-Based Visual Inspection of Printed Circuit Boards", Proceedings of the International Conference on Robotics and Automation", April 9 - 11, 1991, Sacramento, IEEE Comp. Soc. Press, vol. 7, pp. 2696 – 2701

from US2009039263 A1 (applicant Fuji Photo Film Co. Ltd.):

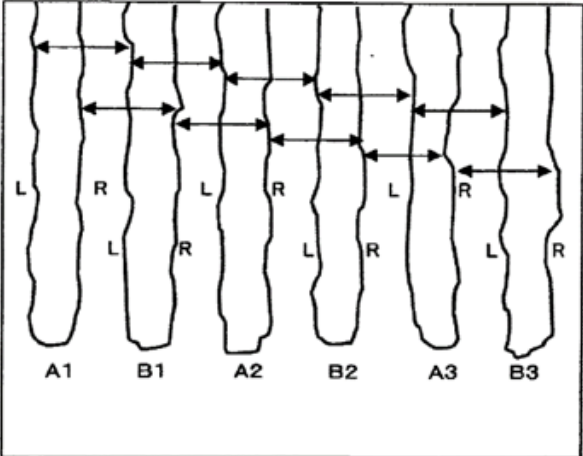
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**Insert:** The following figure heading and image immediately following the existing (remaining) paragraph in the *Definition statement* section.

Illustrative example:





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## G06T 7/0008

### Definition statement

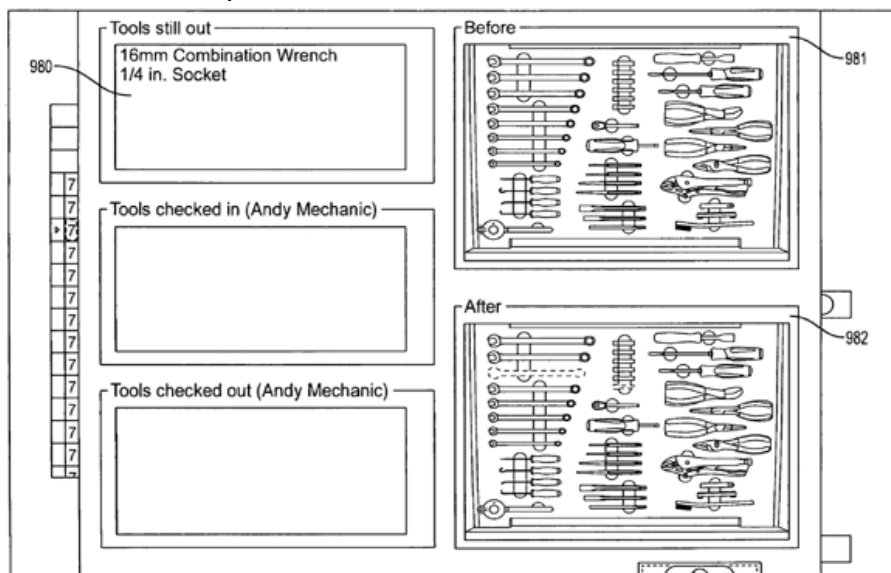
*This place covers:*

**Delete:** The following statements and Fig. 10D in the *Definition statement* section.

Illustrative examples: WO2007010473, WO2009029051.  
From WO2010017533 A2 (applicant Stephen Glickman et al.):

**Insert:** The following figure heading and image immediately following the existing bullets in the *Definition statement* section.

Illustrative example:



## G06T 7/001

### Definition statement

*This place covers:*

**Replace:** The existing two bullets in the *Definition statement* section with the following new bullets:

- Industrial image inspection where an image is compared to a reference image, standard image, ground truth image, gold standard: either by image comparison at image level, e.g. by image correlation, or by comparison of parameters extracted from the images
- Reference images originated from an image acquisition apparatus or derived from computer-aided design data

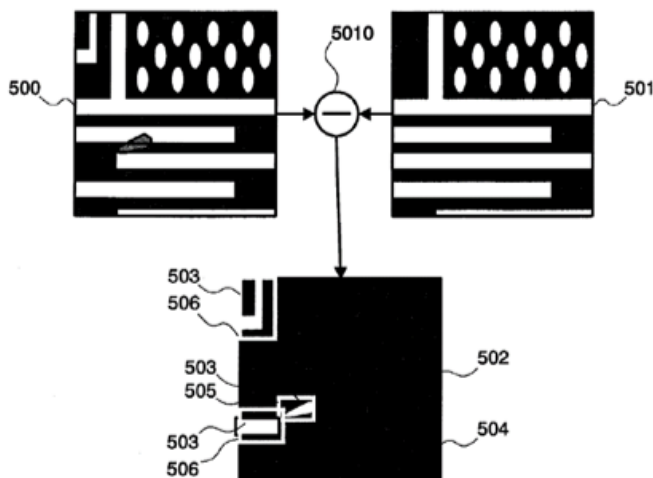
**Delete:** The following statements and Fig. 5 in the *Definition statement* section.

Illustrative examples: WO03081531.

From US2011102573 A1 (applicant T. Honda et al.):

**Insert:** The following figure heading and image immediately following the existing bullets in the *Definition statement* section.

Illustrative example:



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## References

### Informative references

Attention is drawn to the following places, which may be of interest for search:

**Delete:** The following reference from the *Informative references* table.

Image matching for pattern recognition or image matching in general	<a href="#">G06K 9/6203</a>
---	-----------------------------

**Insert:** The following new reference into the *Informative references* table.

Determining representative reference patterns, generating pattern dictionaries in pattern recognition	<a href="#">G06K 9/6255</a>
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## G06T 7/0012

### Definition statement

*This place covers:*

**Replace:** The first paragraph in the *Definition statement* section with the following statement:

Defects, abnormality in biomedical context

**Delete:** The following statement immediately following the text “Illustrative examples:”

Fig. 1 from US2010271470 A1 (applicant LVMH Recherche)

**Insert:** The following new caption (font type and size: Times New Roman 10) immediately below the first illustrative example.

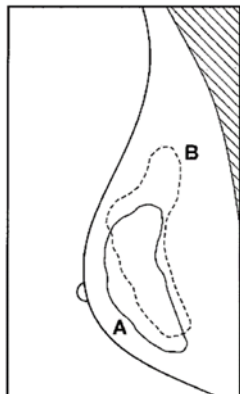
Characterising skin imperfections

**Delete:** The following captions and images:

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Fig. 9 from US2009141955 A1 (applicant Fuji Film Co. Ltd.)



from WO03073946 A1 (applicant EuroSurgical)

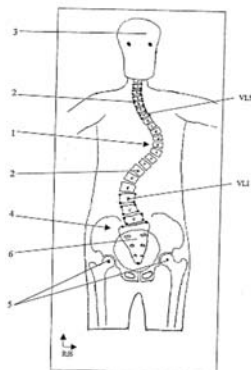
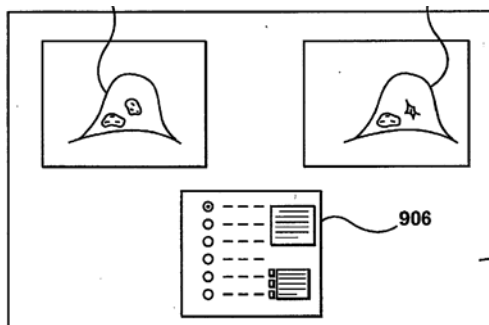


Figure 6

**Insert:** The following new illustrative figure and caption (font type and size: Times New Roman 10) immediately below the first illustrative example and caption.



Evaluating spine balance

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## References

### Application-oriented references

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

**Insert:** The following new references into the *Application-oriented* references table.

Apparatus for radiation diagnostics	<a href="#">A61B 6/00</a>
Diagnosis using ultrasound	<a href="#">A61B 8/00</a>
Signal processing for Nuclear Magnetic Resonance (NMR) imaging systems	<a href="#">G01R 33/54</a>
Ultrasound imaging	<a href="#">G01S 7/52017</a> , <a href="#">G01S 15/8906</a>

### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

**Delete:** The following four references from the *Informative* references table.

Apparatus for radiation diagnostics	<a href="#">A61B 6/00</a>
Diagnosis using ultrasound	<a href="#">A61B 8/00</a>
MR imaging	<a href="#">G01R 33/20</a>
Ultrasound imaging	<a href="#">G01S 7/52017</a> , <a href="#">G01S 15/8906</a>

**Insert:** The following new reference into the *Informative* references table.

Medical informatics	<a href="#">G16H</a>
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**Insert:** The following new paragraph in a new *Special rules* section.

### **Special rules of classification**

When classifying in this group, the use of the indexing scheme [G06T 2207/30004](#) - [G06T 2207/30104](#) is mandatory for additional information related to biomedical image processing.

## **G06T 7/0014**

### **Definition statement**

*This place covers:*

**Delete:** The following bullets immediately following the text “Illustrative examples:”

- WO2005023086 A2, WO0243003 A1
- Fig. 17 from WO2007058632 A1 (applicant Agency Science Tech & Res. et al.):

**Insert:** The following new caption (font type and size: Times New Roman 10) immediately below the existing illustrative example.

Superposition of a perfusion image and the brain atlas images in contour representation

## **References**

### **Informative references**

*Attention is drawn to the following places, which may be of interest for search:*

**Delete:** The existing reference text and symbol [G06K 9/6203](#) from the *Informative* references table.

**Insert:** The following new reference into the *Informative* references table.

Determining representative reference patterns, generating pattern dictionaries in pattern recognition	<a href="#">G06K 9/6255</a>
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## G06T 7/0016

### Definition statement

*This place covers:*

**Insert:** The following bullet at the end of the bullet list in the existing Definition statement.

- Plethysmography based on image analysis

**Delete:** The following bullets immediately following the text “Illustrative examples:”

- US2004081342 A1, US2001002934 A1, US6063030 A
- Fig. 5 from EP1956552 A1 (applicant Agfa Gevaert):

**Replace:** The term “examples” in the header “Illustrative examples: with “example”.

**Insert:** The following new caption (font type and size: Times New Roman 10) immediately below the existing illustrative example.

Floating image, reference image and temporal subtraction image

### References

#### Informative references

*Attention is drawn to the following places, which may be of interest for search:*

**Replace:** The existing reference text for reference [G06T 7/20](#) in the *Informative references* table with:

Analysis of motion, e.g. change detection in general	<a href="#">G06T 7/20</a>
--	---------------------------

**Replace:** The existing symbol [G06K 9/6203](#) (2<sup>nd</sup> row) in the *Informative references* table with:

[G06K 9/6201](#)

**Insert:** The following new paragraph in a new *Special rules* section.

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## Special rules of classification

For plethysmography based on image analysis, Indexing Code [G06T2207/30076](#) should be added.

## G06T7/593

### References

#### *Informative references*

*Attention is drawn to the following places, which may be of interest for search:*

**Replace:** The symbols “G06T7/55, G06T2207/20088” in the reference with “G06T7/55 and G06T2207/20088”, i.e. add “and”.

from

Depth or shape recovery from multiple images using trilinear computations / the trifocal tensor	<a href="#">G06T7/55,</a> <a href="#">G06T2207/20088</a>
---	---

to

Depth or shape recovery from multiple images using trilinear computations / the trifocal tensor	<a href="#">G06T7/55 and</a> <a href="#">G06T2207/20088</a>
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