1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

- G06T 1/40 covered by G06T 1/20

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

### 1/00 General purpose image data processing
- 1/0007. [Image acquisition]
- 1/0014. [Image feed-back for automatic industrial control, e.g. robot with camera (robots B25J 19/023)]
- 1/0021. [Image watermarking]
- 1/0028. [Adaptive watermarking, e.g. Human Visual System [HVS]-based watermarking]
- 1/0035. [Output size adaptive watermarking]
- 1/0042. [Fragile watermarking, e.g. so as to detect tampering]
- 1/0057. [Compression invariant watermarking]
- 1/0064. [Geometric transfer invariant watermarking, e.g. affine transform invariant]
- 1/0071. [using multiple or alternating watermarks]
- 1/0078. [using multiple thresholds]
- 1/0085. [Time domain based watermarking, e.g. watermarks spread over several images]
- 1/0092. [Payload characteristic determination in a watermarking scheme, e.g. number of bits to be embedded]
- 1/20. Processor architectures; Processor configuration, e.g. pipelining
- 1/60. Memory management

### 3/00 Geometric image transformation in the plane of the image
- 3/0006. [Affine transformations (G06T 3/4038, G06T 3/0068 take precedence)]
- 3/0012. [Context preserving transformation, e.g. by using an importance map (G06T 3/0062 takes precedence)]
- 3/0018. [Fisheye, wide-angle transformation]
- 3/0025. [Detail-in-context presentation (G06T 3/0018 takes precedence)]
- 3/0031. [for topological mapping of a higher dimensional structure on a lower dimensional surface]
- 3/0037. [Reshaping or unfolding a 3D tree structure onto a 2D plane]
- 3/0043. [Surface of revolution to planar image transformation]
NOTE

When classifying in groups G06T 7/11 - G06T 7/13, classification is also made in relevant groups G06T 7/136 - G06T 7/194.

7/11 . . . Region-based segmentation
7/12 . . . Edge-based segmentation
7/13 . . . Edge detection
7/136 . . . involving thresholding
7/143 . . . involving probabilistic approaches, e.g. Markov random field [MRF] modelling
7/149 . . . involving deformable models, e.g. active contour models
7/155 . . . involving morphological operators
7/162 . . . involving graph-based methods
7/168 . . . involving transform domain methods
7/174 . . . involving the use of two or more images
7/181 . . . involving edge growing; involving edge linking
7/187 . . . involving region growing; involving region merging; involving connected component labelling
7/194 . . . involving foreground-background segmentation
7/20 . . . Analysis of motion (motion estimation for coding, decoding, compressing or decompressing digital video signals H04N 19/43, H04N 19/51)
7/207 . . . for motion estimation over a hierarchy of resolutions (multi-resolution motion estimation or hierarchical motion estimation for coding, decoding, compressing or decompressing digital video signals H04N 19/53)
7/215 . . . Motion-based segmentation
7/223 . . . using block-matching
7/231 . . . using full search
7/238 . . . using non-full search, e.g. three-step search
7/246 . . . using feature-based methods, e.g. the tracking of corners or segments
7/248 . . . { involving reference images or patches }
7/251 . . . { involving models }
7/254 . . . involving subtraction of images
7/262 . . . using transform domain methods, e.g. Fourier domain methods
7/269 . . . using gradient-based methods
7/277 . . . involving stochastic approaches, e.g. using Kalman filters
7/285 . . . using a sequence of stereo image pairs
7/292 . . . Multi-camera tracking
7/30 . . . Determination of transform parameters for the alignment of images, i.e. image registration
7/32 . . . using correlation-based methods
7/33 . . . using feature-based methods
7/337 . . . { involving reference images or patches }
7/344 . . . { involving models }
7/35 . . . using statistical methods
7/37 . . . using transform domain methods
7/38 . . . Registration of image sequences
7/40 . . . Analysis of texture (depth or shape recovery from texture G06T 7/529)
7/41 . . . based on statistical description of texture
7/42 . . . using transform domain methods
7/44 . . . using image operators, e.g. filters, edge density metrics or local histograms
7/45 . . . using co-occurrence matrix computation
7/46 . . . using random fields
7/48 . . . using fractals
Manipulating 3D models or images for computer graphics
19/00  
19/003  [Navigation within 3D models or images]
19/006  [Mixed reality (object pose determination, tracking or camera calibration for mixed reality G06T 7/00)]
19/20  Editing of 3D images, e.g. changing shapes or colours, aligning objects or positioning parts
11/006  [Inverse problem, transformation from projection-space into object-space, e.g. transform methods, back-projection, algebraic methods]
11/008  [Specific post-processing after tomographic reconstruction, e.g. voxelisation, metal artifact correction]
12/0  Drawing from basic elements, e.g. lines or circles
12/03  [Drawing of straight lines or curves]
12/06  [Drawing of charts or graphs]
11/40  Filling a planar surface by adding surface attributes, e.g. colour or texture
11/60  Editing figures and text: Combining figures or text
11/80  Creating or modifying a manually drawn or painted image using a manual input device, e.g. mouse, light pen, direction keys on keyboard
13/00  Animation
13/20  3D [Three Dimensional] animation
13/205  [driven by audio data]
13/40  of characters, e.g. humans, animals or virtual beings
13/60  of natural phenomena, e.g. rain, snow, water or plants
13/80  2D [Two Dimensional] animation, e.g. using sprites
15/00  3D [Three Dimensional] image rendering
15/005  [General purpose rendering architectures]
15/02  Non-photorealistic rendering
15/04  Texture mapping
15/06  Ray-tracing
15/08  Volume rendering
15/10  Geometric effects
15/20  Perspective computation
15/205  [Image-based rendering]
15/30  Clipping
15/40  Hidden part removal
15/405  [using Z-buffer]
15/50  Lighting effects
15/503  [Blending, e.g. for anti-aliasing]
15/506  [Illumination models]
15/55  Radiosity
15/60  Shadow generation
15/80  Shading
15/83  Phong shading
15/87  Gouraud shading
17/00  Three dimensional [3D] modelling, e.g. data description of 3D objects
17/005  [Tree description, e.g. octree, quadtree]
17/05  Geographic models
17/10  Constructive solid geometry [CSG] using solid primitives, e.g. cylinders, cubes
17/20  Finite element generation, e.g. wire-frame surface description, [tessellation]
17/205  [Re-meshing]
17/30  Polynomial surface description
19/00  Manipulating 3D models or images for computer graphics
19/003  [Navigation within 3D models or images]
19/006  [Mixed reality (object pose determination, tracking or camera calibration for mixed reality G06T 7/00)]
19/20  Editing of 3D images, e.g. changing shapes or colours, aligning objects or positioning parts

Image coding (bandwidth or redundancy reduction for static pictures H04N 1/41; coding or decoding of static colour picture signals H04N 1/64; methods or arrangements for coding, decoding, compressing or decompressing digital video signals H04N 1/86; methods, back-projection, algebraic methods)
9/00  
9/001  [Model-based coding, e.g. wire frame]
9/002  [using neural networks]
9/004  [Predictors, e.g. intraframe, interframe coding]
9/005  [Statistical coding, e.g. Huffman, run length coding]
9/007  [Transform coding, e.g. discrete cosine transform]
9/008  [Vector quantisation]
9/20  Contour coding, e.g. using detection of edges
9/40  Tree coding, e.g. quadtree, octree
11/00  2D [Two Dimensional] image generation
11/001  [Texturing; Colouring; Generation of texture or colour (inpainting G06T 5/005)]
11/003  [Reconstruction from projections, e.g. tomography]
11/005  [Specific pre-processing for tomographic reconstruction, e.g. calibration, source positioning, rebinning, scatter correction, retrospective gating]
Indexing scheme for image data processing or generation, in general

- Image watermarking
- Embedding of the watermark in the spatial domain
- Embedding of the watermark in the frequency domain
- Embedding of the watermark in the coding stream, possibly without decoding; Embedding of the watermark in the compressed domain
- Embedding of the watermark in each block of the image, e.g. segmented watermarking
- Embedding of the watermark in text images, e.g. watermarking text documents using letter skew, letter distance or row distance
- in relation to collusion attacks, e.g. collusion attack resistant
- for copy protection or copy management, e.g. CGMS, copy only once, one-time copy
- Extraction of an embedded watermark; Reliable detection
- whereby both original and watermarked images are required at decoder, e.g. destination-based, non-blind, non-oblivious
- whereby only watermarked image required at decoder, e.g. source-based, blind, oblivious
- whereby only tamper or origin are detected and no embedding takes place
- whereby the quality of watermarked images is measured; Measuring quality or performance of watermarking methods; Balancing between quality and robustness
- whereby the image with embedded watermark is reverted to the original condition before embedding, e.g. lossless, distortion-free or invertible watermarking
- whereby calibration information is embedded in the watermark, e.g. a grid, a scale, a list of transformations

Indexing scheme for image analysis or image enhancement

- Image acquisition modality
- Still image; Photographic image
- from scanner, fax or copier
- Stereo images
- Video; Image sequence
- Stereoscopic video; Stereoscopic image sequence
- Color image
- Range image; Depth image; 3D point clouds
- Satellite or aerial image; Remote sensing
- Multispectral image; Hyperspectral image
- Panchromatic image
- Radar image
- Infrared image
- Images from lightfield camera
- Microscopic image
- from scanning electron microscope
- Fluorescence image
- Endoscopic image
- Tomographic images
- 4D tomography; Time-sequential 3D tomography
- Computed x-ray tomography [CT]
- Hybrid tomography; Concurrent acquisition with multiple different tomographic modalities
- Magnetic resonance imaging [MRI]
- Diffusion tensor magnetic resonance imaging [DTI]
- Dynamic contrast-enhanced magnetic resonance imaging [DCE-MRI]
- Optical tomography; Optical coherence tomography [OCT]
- Positron emission tomography [PET]
- Single photon emission computed tomography [SPECT]
- Digital tomosynthesis [DTS]
- X-ray image
- Fluoroscopy
- Digitally reconstructed radiograph [DRR]
- Scintigraphy
- Ultrasound image
- 3D ultrasound image
- Special mode during image acquisition
- Varying exposure
- Varying focus
- Varying illumination
- Special algorithmic details
- Adaptive image processing
- Globally adaptive
- Locally adaptive
- Hierarchical, coarse-to-fine, multiscale or multiresolution image processing; Pyramid transform
- Dividing image into blocks, subimages or windows
- Filtering details
- Bilateral filtering
- Median filtering
- Morphological image processing
- Distance transform
- Skeletonization; Medial axis transform
- Transform domain processing
- Discrete cosine transform [DCT]
- Discrete and fast Fourier transform, [DFT, FFT]
- Hough transform
- Wavelet transform [DWT]
- Projection on vertical or horizontal image axis
- Graph-based image processing
- Probabilistic image processing
- Training; Learning
- Artificial neural networks [ANN]
Biomedical image processing

Disparity calculation for image-based rendering

Image combination

Image segmentation details

Trinocular vision calculations; trifocal tensor

Interactive image processing based on input by user

Interactive definition of curve of interest

Interactive definition of point of interest, landmark or seed

Interactive definition of region of interest [ROI]

Interactive selection of 2D slice in a 3D data set

Image segmentation details

Active contour; Active surface; Snakes

Active appearance model [AAM]

Active shape model [ASM]

Atlas-based segmentation

Image cropping

Watershed segmentation

Automatic seed setting

Saliency point detection; Corner detection

Radial search

Image enhancement details

Noise reduction or smoothing in the temporal domain; Spatio-temporal filtering

Edge enhancement; Edge preservation

Motion blur correction

Removing film grain; Adding simulated film grain

High dynamic range [HDR] image processing

Subject of image; Context of image processing

Biomedical image processing

Bone

Spine; Backbone

Brain

Catheter; Guide wire

Cell structures in vitro; Tissue sections in vitro

Colon; Small intestine

Colon polyp

Dental; Teeth

Eye; Retina; Ophthalmic

Fetus; Embryo

Heart; Cardiac

Implant; Prosthesis

Liver; Hepatic

Lung

Lung nodule

Mammography; Breast

Microarray; Biochip, DNA array; Well plate

Phlebysmography

Prostate

Kidney; Renal

Skin; Dermal

Stomach; Gastric

Tumor; Lesion

Blood vessel; Artery; Vein; Vascular

Vascular flow; Blood flow; Perfusion

Industrial image inspection

Baggage; Luggage; Suitcase

Casting

CRT, LCD or plasma display

Fabrics; Textile; Paper

Food products

Masonry; Concrete

Metal

Printed circuit board [PCB]

Printing quality

Semiconductor; IC; Wafer

Vehicle coating

Wood; Lumber

Workpiece; Machine component

Image quality inspection

Centreline of tubular or elongated structure

Document

Earth observation

Infrastructure

Vegetation; Agriculture

Weather; Meteorology

Human being; Person

Face

Marker

Marker matrix

Military

Redeye defect

Sports video; Sports image

Ball; Puck

Playing field

Surveillance

Traffic on road, railway or crossing

Trajectory

Counting objects in image

Camera pose

Vehicle exterior or interior

Vehicle exterior; Vicinity of vehicle

Lane; Road marking

Obstacle

Parking

Vehicle interior

Indexing scheme for image generation or computer graphics

Architectural design, interior design

Bandwidth reduction

Bounding box

Cloth

Collision detection, intersection

Cropping

Fluid dynamics

Force feedback

Image data format

Level of detail

Medical

Morphing

Parallel processing

Particle system, point based geometry or rendering

Scene description

Semi-transparency

Weathering

Image generation
Group **G06T 2211/40** is impacted by reclassification into groups **G06T 2211/441, G06T 2211/444, G06T 2211/452, G06T 2211/456, G06T 2211/461** and **G06T 2211/464**.

All groups listed in this Warning should be considered in order to perform a complete search.

**Angiography**

**Dual energy**

**Dynamic**

**Exact reconstruction**

**Filtered back projection [FBP]**

**Iterative**

**Real-time**

**Truncation**

**Limited angle**

**AI-based methods, deep learning or artificial neural networks**

**Low dose acquisition or reduction of radiation dose**

**involving metal artefacts, streaking artefacts, beam hardening or photon starvation**

**involving suppression of scattered radiation or scatter correction**

**Phase contrast imaging or dark field imaging**

**Dual or multimodal imaging, i.e. combining two or more imaging modalities**

**Indexing scheme for animation**

**Animation description language**

**Animation software package**

**Rule based animation**

**Indexing scheme for image rendering**

**Curved planar reformation of 3D line structures**

**Gnomonic or central projection**

**Shadow map, environment map**

**Using real world measurements to influence rendering**

**Indexing scheme for manipulating 3D models or images for computer graphics**

**Annotating, labelling**

**Cut plane or projection plane definition**

**Dimensioning, tolerancing**

**Exploded view**

**Flattening**

**Multi-user, collaborative environment**

**Multiple view windows (top-side-front-sagittal-orthogonal)**

**Indexing scheme for editing of 3D models**

**Aligning objects, relative positioning of parts**

**Assembling, disassembling**

**Colour editing, changing, or manipulating; Use of colour codes**

**Rotation, translation, scaling**

**Shape modification**

**Style variation**