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

1/00 General purpose image data processing
1/007 . [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}
1/005 . {Robust watermarking, e.g. average attack or collusion attack resistant}
1/0057 . {Compression invariant watermarking}
1/0064 . {Geometric transform 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}
3/005 . {for projecting an image on a non-planar surface, e.g. a geodetic screen}

3/0056 . {the transformation method being selected according to the characteristics of the input image}
3/0062 . {Panoramic to cylindrical image transformation}
3/0068 . {for image registration, e.g. elastic snapping}
3/0075 . {using affine transformations}
3/0081 . {by elastic snapping}
3/0087 . {Spatio-temporal transformations, e.g. video cubism}
3/0093 . {for image warping, i.e. transforming by individually repositioning each pixel}

3/20 . Linear translation of a whole image or part thereof, e.g. panning
3/40 . Scaling the whole image or part thereof
3/4007 . {Interpolation-based scaling, e.g. bilinear interpolation (G06T 3/4015, G06T 3/403 take precedence)}
3/4015 . {Demosaicing, e.g. colour filter array [CFA], Bayer pattern}
3/4023 . {Decimation- or insertion-based scaling, e.g. pixel or line decimation}
3/403 . {Edge-driven scaling}
3/4038 . {for image mosaicing, i.e. plane images composed of plane sub-images}
3/4046 . {using neural networks}
3/4053 . {Super resolution, i.e. output image resolution higher than sensor resolution}
3/4061 . {by injecting details from a different spectral band}
3/4069 . {by subpixel displacement}
3/4076 . {by iteratively correcting the provisional high resolution image using the original low-resolution image}
3/4084 . {Transform-based scaling, e.g. FFT domain scaling}
3/4092 . {Image resolution transcoding, e.g. client/server architecture}
3/60 . Rotation of a whole image or part thereof
3/602 . {Block rotation, e.g. by recursive reversing or rotating}
3/604 . {using a CORDIC [COordinate Rotation Digital Compute] device}
3/606 . {Rotation by memory addressing or mapping}
5/00 Image enhancement or restoration

5/001 {Image restoration}

5/002 {Denoising; Smoothing (noise processing or correction adapted to be used in an image pickup device containing and electronic image sensor \(\text{H04N 5/217, H04N 5/235} - \text{H04N 5/365})\)}

5/003 {Deblurring; Sharpening (vibration or motion blur correction for cameras comprising an electronic image sensor \(\text{H04N 5/23264})\)}

5/004 {Unsharp masking}

5/005 {Retouching; Inpainting; Scratch removal (detecting, correction, reducing or removing defects, e.g. non-responsive pixels of solid state image sensors H04N 5/367, scratch removal for cinematographic films scanned by electronic image sensor \(\text{H04N 5/253})\)}

5/006 {Geometric correction (detecting, correcting, reducing or removing artefacts resulting only from the lens unit, e.g. flare, shading, vignetting or "cos4" \(\text{H04N 5/3572};\) correction of chromatic aberrations adapted to be used in an image pickup device containing an electronic image sensor \(\text{H04N 9/045})\)}

5/007 {Dynamic range modification (applied in cameras using an electronic image sensor \(\text{H04N 5/2355, H04N 5/2356})\)}

5/008 . . . {Local, e.g. shadow enhancement}

5/009 . . . {Global, i.e. based on properties of the image as a whole (applied in cameras using an electronic image sensor \(\text{H04N 5/23229, H04N 5/235})\)}


5/20 . by the use of local operators \{applied in cameras using an electronic image sensor \(\text{H04N 5/23229, H04N 5/235}, \text{H04N 5/253, H04N 5/367})\)}

5/30 . . . Erosion or dilatation, e.g. thinning

5/40 . by the use of histogram techniques \{applied in cameras using an electronic image sensor \(\text{H04N 5/23229, H04N 5/235})\)}

5/50 . by the use of more than one image, e.g. averaging, subtraction \{applied in cameras using an electronic image sensor \(\text{H04N 5/23229, H04N 5/235})\}

7/00 Image analysis

7/002 {Inspection of images, e.g. flaw detection}

7/004 . . . {Industrial image inspection}

7/006 . . . {using a design-rule based approach}

7/008 . . . {checking presence/absence}

7/001 . . . {using an image reference approach}

7/0012 . . {Biomedical image inspection}

7/0014 . . {using an image reference approach}

7/0016 . . . {involving temporal comparison}

7/10 Segmentation; Edge detection (motion-based segmentation \(\text{G06T 7/215})\)

NOTE

In this group, multi-aspect classification is applied, so that subject matter characterised by aspects covered by groups \(\text{G06T 7/11, G06T 7/12 or G06T 7/13} \) should also be classified in any of the relevant groups \(\text{G06T 7/36 - G06T 7/194})\).
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 19/00)

9/00

9/00 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 19/00)

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}
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}

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}
11/20 . . . Drawing from basic elements, e.g. lines or circles
11/203 . . . {Drawing of straight lines or curves}
11/206 . . . {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}
19/005 . . . {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
## 2200/00 Indexing scheme for image data processing or generation, in general

- 2200/04 . involving 3D image data
- 2200/08 . involving all processing steps from image acquisition to 3D model generation
- 2200/12 . involving antialiasing
- 2200/16 . involving adaptation to the client's capabilities
- 2200/21 . involving computational photography
- 2200/24 . involving graphical user interfaces [GUIs]
- 2200/28 . involving image processing hardware
- 2200/32 . involving image mosaicing
- 2200/36 . Review paper; Tutorial; Survey

## 2201/00 General purpose image data processing

- 2201/005 . Image watermarking
- 2201/0051 . . Embedding of the watermark in the spatial domain
- 2201/0052 . . Embedding of the watermark in the frequency domain
- 2201/0053 . . Embedding of the watermark in the coding stream, possibly without decoding; Embedding of the watermark in the compressed domain
- 2201/0061 . . Embedding of the watermark in each block of the image, e.g. segmented watermarking
- 2201/0062 . . Embedding of the watermark in text images, e.g. watermarking text documents using letter skew, letter distance or row distance
- 2201/0063 . . in relation to collusion attacks, e.g. collusion attack resistant
- 2201/0064 . . for copy protection or copy management, e.g. CGMS, copy only once, one-time copy
- 2201/0065 . . Extraction of an embedded watermark; Reliable detection
- 2201/0081 . . whereby both original and watermarked images are required at decoder, e.g. destination-based, non-blind, non-oblivious
- 2201/0083 . . whereby only watermarked image required at decoder, e.g. source-based, blind, oblivious
- 2201/0201 . . whereby only tamper or origin are detected and no embedding takes place
- 2201/0202 . . whereby the quality of watermarked images is measured; Measuring quality or performance of watermarking methods; Balancing between quality and robustness
- 2201/0203 . . whereby the image with embedded watermark is reverted to the original condition before embedding, e.g. lossless, distortion-free or invertible watermarking
- 2201/0601 . . whereby calibration information is embedded in the watermark, e.g. a grid, a scale, a list of transformations

## 2207/00 Indexing scheme for image analysis or image enhancement

- 2207/10 . . Image acquisition modality
- 2207/10004 . . Still image; Photographic image
- 2207/10008 . . from scanner, fax or copier
- 2207/10012 . . Stereo images
- 2207/10016 . . Video; Image sequence
- 2207/10021 . . Stereoscopic video; Stereoscopic image sequence
- 2207/10024 . . Color image
- 2207/10028 . . Range image; Depth image; 3D point clouds
- 2207/10032 . . Satellite or aerial image; Remote sensing
- 2207/10036 . . Multispectral image; Hyperspectral image
- 2207/10041 . . Panchromatic image
- 2207/10044 . . Radar image
- 2207/10048 . . Infrared image
- 2207/10052 . . Images from lightfield camera
- 2207/10056 . . Microscopic image
- 2207/10061 . . from scanning electron microscope
- 2207/10064 . . Fluorescence image
- 2207/10068 . . Endoscopic image
- 2207/10072 . . Tomographic images
- 2207/10076 . . 4D tomography; Time-sequential 3D tomography
- 2207/10081 . . Computed x-ray tomography [CT]
- 2207/10084 . . Hybrid tomography; Concurrent acquisition with multiple different tomographic modalities
- 2207/10088 . . Magnetic resonance imaging [MRI]
- 2207/10092 . . Diffusion tensor magnetic resonance imaging [DTI]
- 2207/10096 . . Dynamic contrast-enhanced magnetic resonance imaging [DCE-MRI]
- 2207/10101 . . Optical tomography; Optical coherence tomography [OCT]
- 2207/10104 . . Positron emission tomography [PET]
- 2207/10108 . . Single photon emission computed tomography [SPECT]
- 2207/10112 . . Digital tomosynthesis [DTS]
- 2207/10116 . . X-ray image
- 2207/10121 . . Fluoroscopy
- 2207/10124 . . Digitally reconstructed radiograph [DRR]
- 2207/10128 . . Scintigraphy
- 2207/10132 . . Ultrasound image
- 2207/10136 . . 3D ultrasound image
- 2207/10141 . . Special mode during image acquisition
- 2207/10144 . . Varying exposure
- 2207/10148 . . Varying focus
- 2207/10152 . . Varying illumination
- 2207/1020 . . Special algorithmic details
- 2207/20004 . . Adaptive image processing
- 2207/20008 . . Globally adaptive
- 2207/20012 . . Locally adaptive
- 2207/20016 . . Hierarchical, coarse-to-fine, multiscale or multiresolution image processing; Pyramid transform
- 2207/20021 . . Dividing image into blocks, subimages or windows
- 2207/20024 . . Filtering details
- 2207/20028 . . Bilateral filtering
- 2207/20032 . . Median filtering
- 2207/20036 . . Morphological image processing
- 2207/20041 . . Distance transform
- 2207/20044 . . Skeletonization; Medial axis transform
- 2207/20048 . . Transform domain processing
- 2207/20052 . . Discrete cosine transform [DCT]
- 2207/20056 . . Discrete and fast Fourier transform, [DFT, FFT]
- 2207/20061 . . Hough transform
- 2207/20064 . . Wavelet transform [DWT]
- 2207/20068 . . Projection on vertical or horizontal image axis
- 2207/20072 . . Graph-based image processing
- 2207/20076 . . Probabilistic image processing
- 2207/20081 . . Training; Learning
- 2207/20084 . . Artificial neural networks [ANN]
Image generation

Indexing scheme for image generation or computer graphics

2207/20088 . . . Trinocular vision calculations; trifocal tensor
2207/20092 . . . Interactive image processing based on input by user
2207/20096 . . . Interactive definition of curve of interest
2207/20101 . . . Interactive definition of point of interest, landmark or seed
2207/20104 . . . Interactive definition of region of interest [ROI]
2207/20108 . . . Interactive selection of 2D slice in a 3D data set
2207/20112 . . . Image segmentation details
2207/20116 . . . Active contour; Active surface; Snakes
2207/20121 . . . Active appearance model [AAM]
2207/20124 . . . Active shape model [ASM]
2207/20128 . . . Atlas-based segmentation
2207/20132 . . . Image cropping
2207/20152 . . . Watershed segmentation
2207/20156 . . . Automatic seed setting
2207/20161 . . . Level set
2207/20164 . . . Salient point detection; Corner detection
2207/20168 . . . Radial search
2207/20172 . . . Image enhancement details
2207/20182 . . . Noise reduction or smoothing in the temporal domain; Spatio-temporal filtering
2207/20192 . . . Edge enhancement; Edge preservation
2207/20201 . . . Motion blur correction
2207/20204 . . . Removing film grain; Adding simulated film grain
2207/20208 . . . High dynamic range [HDR] image processing
2207/20212 . . . Image combination
2207/20216 . . . Image averaging
2207/20221 . . . Image fusion; Image merging
2207/20224 . . . Image subtraction
2207/20228 . . . Disparity calculation for image-based rendering
2207/30 . . . Subject of image; Context of image processing
2207/30004 . . . Biomedical image processing
2207/30008 . . . Bone
2207/30012 . . . Spine; Backbone
2207/30016 . . . Brain
2207/30021 . . . Catheter; Guide wire
2207/30024 . . . Cell structures in vitro; Tissue sections in vitro
2207/30028 . . . Colon; Small intestine
2207/30032 . . . Colon polyp
2207/30036 . . . Dental; Teeth
2207/30041 . . . Eye; Retina; Ophthalmic
2207/30044 . . . Fetus; Embryo
2207/30048 . . . Heart; Cardiac
2207/30052 . . . Implant; Prosthesis
2207/30056 . . . Liver; Hepatic
2207/30061 . . . Lung
2207/30064 . . . Lung nodule
2207/30068 . . . Mammography; Breast
2207/30072 . . . Microarray; Biochip, DNA array; Well plate
2207/30076 . . . Plethysmography
2207/30081 . . . Prostate
2207/30084 . . . Kidney; Renal
2207/30088 . . . Skin; Dermal
2207/30092 . . . Stomach; Gastric
2207/30096 . . . Tumor; Lesion
2207/30101 . . . Blood vessel; Artery; Vein; Vascular
2207/30104 . . . Vascular flow; Blood flow; Perfusion
2207/30108 . . . Industrial image inspection
2207/30112 . . . Baggage; Luggage; Suitcase
2207/30116 . . . Casting
2207/30121 . . . CRT, LCD or plasma display
2207/30124 . . . Fabrics; Textile; Paper
2207/30128 . . . Food products
2207/30132 . . . Masonry; Concrete
2207/30136 . . . Metal
2207/30141 . . . Printed circuit board [PCB]
2207/30144 . . . Printing quality
2207/30148 . . . Semiconductor; IC; Wafer
2207/30152 . . . Solder
2207/30156 . . . Vehicle coating
2207/30161 . . . Wood; Lumber
2207/30164 . . . Workpiece; Machine component
2207/30168 . . . Image quality inspection
2207/30172 . . . Centreline of tubular or elongated structure
2207/30176 . . . Document
2207/30181 . . . Earth observation
2207/30184 . . . Infrastructure
2207/30188 . . . Vegetation; Agriculture
2207/30192 . . . Weather; Meteorology
2207/30196 . . . Human being; Person
2207/30201 . . . Face
2207/30204 . . . Marker
2207/30208 . . . Marker matrix
2207/30212 . . . Military
2207/30216 . . . Redeye defect
2207/30221 . . . Sports video; Sports image
2207/30224 . . . Ball; Puck
2207/30228 . . . Playing field
2207/30232 . . . Surveillance
2207/30236 . . . Traffic on road, railway or crossing
2207/30241 . . . Trajectory
2207/30242 . . . Counting objects in image
2207/30244 . . . Camera pose
2207/30248 . . . Vehicle exterior or interior
2207/30252 . . . Vehicle exterior; Vicinity of vehicle
2207/30256 . . . . Lane; Road marking
2207/30261 . . . . . Obstacle
2207/30264 . . . . . Parking
2207/30268 . . . . . Vehicle interior

2210/00 Indexing scheme for image generation or computer graphics

2210/04 . . . Architectural design, interior design
2210/08 . . . Bandwidth reduction
2210/12 . . . Bounding box
2210/16 . . . Cloth
2210/21 . . . Collision detection, intersection
2210/22 . . . Cropping
2210/24 . . . Fluid dynamics
2210/28 . . . Force feedback
2210/32 . . . Image data format
2210/36 . . . Level of detail
2210/41 . . . Medical
2210/44 . . . Morphing
2210/52 . . . Parallel processing
2210/56 . . . Particle system, point based geometry or rendering
2210/61 . . . Scene description
2210/62 . . . Semi-transparency
2210/64 . . . Weathering

2211/00 Image generation
2211/40  .  Computed tomography
2211/404 .  .  Angiography
2211/408 .  .  Dual energy
2211/412 .  .  Dynamic
2211/416 .  .  Exact reconstruction
2211/421 .  .  Filtered back projection [FBP]
2211/424 .  .  Iterative
2211/428 .  .  Real-time
2211/432 .  .  Truncation
2211/436 .  .  Limited angle

2215/00  Indexing scheme for manipulation of 3D models or images for computer graphics
2213/04  .  Animation description language
2213/08  .  Animation software package
2213/12  .  Rule based animation

2215/06  .  Curved planar reformation of 3D line structures
2215/08  .  Gnomonic or central projection
2215/12  .  Shadow map, environment map
2215/16  .  Using real world measurements to influence rendering

2219/00  Indexing scheme for editing of 3D models
2219/004 .  .  Annotating, labelling
2219/008 .  .  Cut plane or projection plane definition
2219/012 .  .  Dimensioning, tolerancing
2219/016 .  .  Exploded view
2219/021 .  .  Flattening
2219/024 .  .  Multi-user, collaborative environment
2219/028 .  .  Multiple view windows (top-side-front-sagittal-orthogonal)
2219/20  .  Indexing scheme for editing of 3D models
2219/2004 .  .  Aligning objects, relative positioning of parts
2219/2008 .  .  Assembling, disassembling
2219/2012 .  .  Colour editing, changing, or manipulating; Use of colour codes
2219/2016 .  .  Rotation, translation, scaling
2219/2021 .  .  Shape modification
2219/2024 .  .  Style variation