

CPC COOPERATIVE PATENT CLASSIFICATION

G PHYSICS (NOTES omitted)

INSTRUMENTS

G06 COMPUTING; CALCULATING; COUNTING (NOTES omitted)

G06K GRAPHICAL DATA READING (image or video recognition or understanding [G06V](#)); PRESENTATION OF DATA; RECORD CARRIERS; HANDLING RECORD CARRIERS

NOTE

This subclass covers:

- marking, sensing, and conveying of record carriers;
- reading graphical representations from record carriers, e.g. barcodes;
- presenting visually or otherwise the data recognised or the result of a computation.

WARNING

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	Methods or arrangements for marking the record carrier in digital fashion	1/22	• • Simultaneous marking and printing on different record carriers, e.g. on different types of record carrier
1/02	• by punching		
1/025	• • {Details, e.g. construction of the punching mechanism}	3/00	Methods or arrangements for printing of data in the shape of alphanumeric or other characters from a record carrier, e.g. interpreting, printing-out from a magnetic tape
1/04	• • controlled by sensing markings on the record carrier being punched	3/02	• Translating markings on a record carrier into printed data on the same record carrier, i.e. interpreting
1/05	• • High-speed punches, e.g. controlled by electric computer		
1/06	• • Manually-controlled devices	5/00	Methods or arrangements for verifying the correctness of markings on a record carrier; Column detection devices
1/08	• • • Card punches	5/02	• the verifying forming a part of the marking action
1/10	• • • Tape punches	5/04	• Verifying the alignment of markings
1/12	• otherwise than by punching	7/00	Methods or arrangements for sensing record carriers, {e.g. for reading patterns} (G06K 9/00 takes precedence; methods or arrangements for marking the record carrier in digital fashion G06K 1/00)
1/121	• • {by printing code marks (applying code marks to labels B65C 9/46 ; marking or coding completed packages B65B 61/26)}	7/0004	• {Hybrid readers}
1/123	• • • {for colour code marks}	7/0008	• {General problems related to the reading of electronic memory record carriers, independent of its reading method, e.g. power transfer}
1/125	• • {by magnetic means}	7/0013	• {by galvanic contacts, e.g. card connectors for ISO-7816 compliant smart cards or memory cards, e.g. SD card readers (connectors in general H01R 13/00 ; connectors for SIM cards used in mobile phones or the like H04B 1/3816)}
1/126	• • {by photographic or thermographic registration (recording apparatus for measuring instruments G01D 15/00)}	7/0017	• • {the reading head of the connector being removably attached to the housing}
1/128	• • {by electric registration, e.g. electrolytic, spark erosion (recording apparatus for measuring instruments G01D 15/06 ; information storage in general G11)}	7/0021	• • {for reading/sensing record carriers having surface contacts}
1/14	• by transferring data from a similar or dissimilar record carrier	7/0026	• • • {the galvanic contacts of the connector adapted for landing on the contacts of the card upon card insertion}
1/16	• • by reproducing data from one punched card on to one or more punched cards without the code representation, i.e. duplicating		
1/18	• • by transferring data from one type of record carrier on to another type of record carrier, e.g. from magnetic tape to punched card		
1/20	• Simultaneous marking of record carrier and printing-out of data, e.g. printing-punch		

- 7/003 . . . {means for pressing the connector contacts in the direction of the card contacts to assure trustworthy electrical connection between card and connector}
 - 7/0034 . . {the connector being capable of simultaneously receiving a plurality of cards in the same insertion slot}
 - 7/0039 . . . {the plurality of cards being cards of the same type and format, e.g. two ISO 7816 smart cards}
 - 7/0043 . . . {the plurality of cards being cards of different formats, e.g. SD card and memory stick}
 - 7/0047 . . {for reading/sensing record carriers having edge contacts}
 - 7/0052 . . {connectors capable of contacting cards of different formats, e.g. memory stick and SD card readers sharing at least one connector contact and the associated signal line, e.g. both using the same signal line for input or output of data}
 - 7/0056 . . {housing of the card connector}
 - 7/006 . . . {the housing being a portable casing}
 - 7/0065 . . . {comprising keyboard or display, e.g. a pocket calculator sized casing suitable for off-line checking the remaining money on a smart banking card}
 - 7/0069 . . . {including means for detecting correct insertion of the card, e.g. end detection switches notifying that the card has been inserted completely and correctly}
 - 7/0073 . . . {having multiple insertion slots, the respective slots suited for the same or different card form factors}
 - 7/0078 . . . {reinforced housing for protection against damage, be it due malevolent action, such as drilling and other ways of forced entry, or by accident, such as shock due to dropping}
 - 7/0082 . . . {comprising an arrangement for protection against electrostatic discharge, e.g. by grounding part of the conductive housing}
 - 7/0086 . . {the connector comprising a circuit for steering the operations of the card connector}
 - 7/0091 . . . {the circuit comprising an arrangement for avoiding intrusions and unwanted access to data inside of the connector}
 - 7/0095 . {Testing the sensing arrangement, e.g. testing if a magnetic card reader, bar code reader, RFID interrogator or smart card reader functions properly [\(testing of electrical circuits G01R 31/28\)](#)}
 - 7/01 . Details
 - 7/015 . . Aligning or centering of the sensing device with respect to the record carrier
 - 7/016 . . Synchronisation of sensing process
 - 7/0163 . . . {by means of additional timing marks on the record-carrier}
 - 7/0166 . . . {by means of clock-signals derived from the code marks, e.g. self-clocking code}
 - 7/02 . by pneumatic or hydraulic means, e.g. sensing punched holes with compressed air; by sonic means {; by ultrasonic means}
 - 7/04 . by mechanical means, e.g. by pins operating electric contacts
 - 7/042 . . {controlling electric circuits}
 - 7/045 . . . {whereby the entire datafield of the record carriers is simultaneously sensed}
 - 7/047 . . . {whereby the data field of the record carriers is sensed successively column after column}
 - 7/06 . by means which conduct current when a mark is sensed or absent, e.g. contact brush for a conductive mark
 - 7/065 . . {for conductive marks}
 - 7/08 . by means detecting the change of an electrostatic or magnetic field, e.g. by detecting change of capacitance between electrodes
 - 7/081 . . {electrostatic, e.g. by detecting the charge of capacitance between electrodes}
 - 7/082 . . {using inductive or magnetic sensors}
 - 7/083 . . . {inductive [\(G06K 7/10336 takes precedence\)](#)}
 - 7/084 {sensing magnetic material by relative movement detecting flux changes without altering its magnetised state}
 - 7/085 {metal detectors}
 - 7/086 {sensing passive circuit, e.g. resonant circuit transponders}
 - 7/087 . . . {flux-sensitive, e.g. magnetic, detectors [\(G06K 7/10336 takes precedence\)](#)}
 - 7/088 {using magneto-sensitive switches, e.g. reed-switches}
 - 7/089 . . {hand-held scanners}
 - 7/10 . by electromagnetic radiation, e.g. optical sensing; by corpuscular radiation
 - 7/10009 . . {sensing by radiation using wavelengths larger than 0.1 mm, e.g. radio-waves or microwaves}
- NOTE**
- This group covers electromagnetic interrogation as radiated by the antenna of an interrogation device while interrogating a plurality of wireless electronic memory record carriers, e.g. non-contact smart cards, RFID tags or labels, or transponders
- 7/10019 . . . {resolving collision on the communication channels between simultaneously or concurrently interrogated record carriers. [\(collision between the communication channels used by wireless communication devices, where the solution is not particularly adapted for RFIDs or the like, H04W 74/08\)](#)}
 - 7/10029 {the collision being resolved in the time domain, e.g. using binary tree search or RFID responses allocated to a random time slot}
 - 7/10039 {interrogator driven, i.e. synchronous}
 - 7/10049 {binary tree}
 - 7/10059 {transponder driven}
 - 7/10069 {the collision being resolved in the frequency domain, e.g. by hopping from one frequency to the other [\(frequency hopping or spread spectrum techniques H04B 7/00\)](#)}
 - 7/10079 {the collision being resolved in the spatial domain, e.g. temporary shields for blindfolding the interrogator in specific directions}
 - 7/10089 {the interrogation device using at least one directional antenna or directional interrogation field to resolve the collision [\(direction or location finding, such as triangulation techniques, G01S 13/00\)](#)}

- 7/10099 {the directional field being used for pinpointing the location of the record carrier, e.g. for finding or locating an RFID tag amongst a plurality of RFID tags, each RFID tag being associated with an object, e.g. for physically locating the RFID tagged object in a warehouse}
- 7/10108 {interrogating only those RFIDs that fulfill a predetermined requirement, e.g. selecting all RFIDs having the same speed and moving in a cloud like fashion, e.g. on the same train; interrogating only RFIDs having a certain predetermined temperature, e.g. in the same fridge, another possibility being the active ignoring of a group of tags that fulfill a predetermined requirement, equivalent to the Boolean NOT operation}
- 7/10118 {the sensing being preceded by at least one preliminary step}
- 7/10128 {the step consisting of detection of the presence of one or more record carriers in the vicinity of the interrogation device}
- 7/10138 {the step consisting of determining the type of record carrier, e.g. to determine if the record carrier is an RFID tag of the long or short range type, or to determine the preferred communication protocol of the RFID tag}
- 7/10148 {the step consisting of dynamically tuning the resonant circuit of the interrogation device that is emitting the interrogation signal, e.g. for impedance matching inside of the interrogation device ([for tuning related to loop aerials in general H01Q 7/00](#))}
- 7/10158 {methods and means used by the interrogation device for reliably powering the wireless record carriers using an electromagnetic interrogation field}
- 7/10168 {the powering being adversely affected by environmental influences, e.g. unwanted energy loss in the interrogation signal due to metallic or capacitive objects in the proximity of the interrogation device or in the proximity of the interrogated record carrier}
- 7/10178 {including auxiliary means for focusing, repeating or boosting the electromagnetic interrogation field ([comparable booster antennas integrated on the record carrier itself G06K 19/07794](#))}
- 7/10188 {the repeating consisting of intelligently propagating data from record carriers via intermediate stations to the interrogation device, e.g. a distant RFID or RFID falling in a "shadow" region sending its identification data to an interrogation device using at least the help of one further RFID that is positioned in a region "visible" to the interrogation device, the further RFID therefore functioning as a relay station}
- 7/10198 {setting parameters for the interrogator, e.g. programming parameters and operating modes}
- 7/10207 {parameter settings related to power consumption of the interrogator}
- 7/10217 {parameter settings controlling the transmission power of the interrogator}
- 7/10227 {loading programming parameters or programs into the interrogator, e.g. for configuring the interrogator}
- 7/10237 {the reader and the record carrier being capable of selectively switching between reader and record carrier appearance, e.g. in near field communication [NFC] devices where the NFC device may function as an RFID reader or as an RFID tag}
- 7/10247 {issues specific to the use of single wire protocol [SWP] in NFC like devices}
- 7/10257 {arrangements for protecting the interrogation against piracy attacks ([computer security in general G06F 21/00](#); [jamming of communication, countermeasures H04K 3/00](#); [secret communication H04K 1/00](#))}
- 7/10267 {the arrangement comprising a circuit inside of the interrogation device}
- 7/10277 {the arrangement being mechanical, such as reinforced housings or protective cages against unlawful entry}
- 7/10287 {the arrangement including a further device in the proximity of the interrogation device, e.g. signal scrambling devices}
- 7/10297 {arrangements for handling protocols designed for non-contact record carriers such as RFIDs NFCs, e.g. ISO/IEC 14443 and 18092 ([protocols for data communication in general, see H04L 29/06](#))}
- 7/10306 {ultra wide band}
- 7/10316 {using at least one antenna particularly designed for interrogating the wireless record carriers ([antennas in general H01Q 1/22](#))}
- 7/10326 {the antenna being of the very-near field type, e.g. capacitive}
- 7/10336 {the antenna being of the near field type, inductive coil}
- 7/10346 {the antenna being of the far field type, e.g. HF types or dipoles}
- 7/10356 {using a plurality of antennas, e.g. configurations including means to resolve interference between the plurality of antennas}
- 7/10366 {the interrogation device being adapted for miscellaneous applications}
- 7/10376 {the interrogation device being adapted for being moveable}
- 7/10386 {the interrogation device being of the portable or hand-held type, e.g. incorporated in ubiquitous hand-held devices such as PDA or mobile phone, or in the form of a portable dedicated RFID reader}
- 7/10396 {the interrogation device being wearable, e.g. as a glove, bracelet, or ring ([wearable aerials in general H01Q 1/27](#))}
- 7/10405 {the interrogation device including an arrangement for sensing environmental parameters, such as a temperature or acceleration sensor, e.g. used as an on/off trigger or as a warning means}

- 7/10415 {the interrogation device being fixed in its position, such as an access control device for reading wireless access cards, or a wireless ATM (banking machines in general [G07F 19/00](#))}
- 7/10425 {the interrogation device being arranged for interrogation of record carriers passing by the interrogation device}
- 7/10435 {the interrogation device being positioned close to a conveyor belt or the like on which moving record carriers are passing (conveying in accordance with bodily destination marks, see [B65G 47/46](#), sorting of objects carrying identity markings, see [B07C 5/34](#))}
- 7/10445 {the record carriers being fixed to further objects, e.g. RFIDs fixed to packages, luggage, mail-pieces or work-pieces transported on a conveyor belt}
- 7/10455 {the record carriers being fixed to an endless tape or at least not fixed to further objects}
- 7/10465 {the interrogation device being capable of self-diagnosis, e.g. in addition to or as part of the actual interrogation process (testing of electrical circuits in general [G01R 31/28](#))}
- 7/10475 {arrangements to facilitate interaction with further interrogation devices, e.g. such that at least two interrogation devices may function and cooperate in a network of such devices}
- 2007/10485 . . {Arrangement of optical elements}
- 2007/10495 . . {Circuits for pulse forming, amplifying}
- 2007/10504 . . {Data fields affixed to objects or articles}
- 2007/10514 . . . {Randomly orientated data fields}
- 2007/10524 . . {Hand-held scanners}
- 2007/10534 . . . {Scanner to be worn on a finger or on a wrist}
- 7/10544 . . {by scanning of the records by radiation in the optical part of the electromagnetic spectrum}
- 7/10554 . . . {Moving beam scanning}
- 7/10564 {Light sources}
- 7/10574 {Multiple sources}
- 7/10584 {Source control}
- 7/10594 {Beam path}
- 7/10603 {Basic scanning using moving elements}
- 7/10613 {by rotation, e.g. polygon}
- 7/10623 {Constructional details}
- 7/10633 {by oscillation}
- 7/10643 {Activating means}
- 7/10653 {using flexible or piezoelectric means}
- 7/10663 {using hologram}
- 7/10673 {Parallel lines}
- 7/10683 {Arrangement of fixed elements}
- 7/10693 {for omnidirectional scanning}
- 7/10702 {Particularities of propagating elements, e.g. lenses, mirrors ([G06K 7/10831](#) takes precedence)}
- 7/10712 . . . {Fixed beam scanning}
- 7/10722 {Photodetector array or CCD scanning}
- 7/10732 {Light sources}
- 7/10742 {including a diffuser for diffusing the light from the light source to create substantially uniform illumination of the target record carrier}
- 7/10752 {Exposure time control}
- 7/10762 {Relative movement}
- 7/10772 {Moved readers, e.g. pen, wand}
- 7/10782 {Slot readers}
- 7/10792 . . . {Special measures in relation to the object to be scanned}
- 7/10801 {Multidistance reading}
- 7/10811 {Focalisation}
- 7/10821 . . . {further details of bar or optical code scanning devices}
- 7/10831 {Arrangement of optical elements, e.g. lenses, mirrors, prisms (optical elements [see G02B](#))}
- 7/10841 {Particularities of the light-sensitive elements (semiconductor devices [H01L](#))}
- 7/10851 {Circuits for pulse shaping, amplifying, eliminating noise signals, checking the function of the sensing device (basic electronic circuitry [H03](#))}
- 7/10861 {sensing of data fields affixed to objects or articles, e.g. coded labels (postal sorting [B07C 3/14](#), conveying articles [B65G 47/48](#))}
- 7/10871 {randomly oriented data-fields, code-marks therefore, e.g. concentric circles-code}
- 7/10881 {constructional details of hand-held scanners}
- 7/10891 {the scanner to be worn on a finger or on a wrist}
- 7/109 {adaptations to make the hand-held scanner useable as a fixed scanner}
- 7/1091 {means to wake up the scanner from a sleep mode, e.g. using an acceleration sensor indicating that the scanner is being picked up by a user}
- 7/1092 {sensing by means of TV-scanning}
- 7/1093 {sensing, after transfer of the image of the data-field to an intermediate store, e.g. storage with cathode ray tube}
- 7/1094 {the record carrier being at least partially of the hologram type}
- 7/1095 {the scanner comprising adaptations for scanning a record carrier that is displayed on a display-screen or the like}
- 7/1096 {the scanner having more than one scanning window, e.g. two substantially orthogonally placed scanning windows for integration into a check-out counter of a super-market}
- 7/1097 {Optical sensing of electronic memory record carriers, such as interrogation of RFIDs with an additional optical interface}
- 7/1098 {the scanning arrangement having a modular construction}
- 7/1099 . . {scanning using X-rays}
- 7/12 . . . using a selected wavelength, e.g. to sense red marks and ignore blue marks
- 7/14 . . . using light without selection of wavelength, e.g. sensing reflected white light {([G06K 7/10831](#) - [G06K 7/1097](#) take precedence)}

- 7/1404 . . . {Methods for optical code recognition}
- 7/1408 {the method being specifically adapted for the type of code}
- 7/1413 {1D bar codes}
- 7/1417 {2D bar codes}
- 7/1421 {Circular bar codes}
- 7/1426 {Multi-level bar codes}
- 7/143 {Glyph-codes}
- 7/1434 {Barcodes with supplemental or add-on codes}
- 7/1439 {including a method step for retrieval of the optical code}
- 7/1443 {locating of the code in an image}
- 7/1447 {extracting optical codes from image or text carrying said optical code}
- 7/1452 {detecting bar code edges}
- 7/1456 {determining the orientation of the optical code with respect to the reader and correcting therefore}
- 7/146 {the method including quality enhancement steps}
- 7/1465 {using several successive scans of the optical code}
- 7/1469 {using sub-pixel interpolation}
- 7/1473 {error correction}
- 7/1478 {adapting the threshold for pixels in a CMOS or CCD pixel sensor for black and white recognition}
- 7/1482 {using fuzzy logic or natural solvers, such as neural networks, genetic algorithms and simulated annealing}
- 7/1486 {Setting the threshold-width for bar codes to be decoded}
- 7/1491 {the method including a reconstruction step, e.g. stitching two pieces of bar code together to derive the full bar code}
- 7/1495 {the method including an image compression step}

9/00 **Methods or arrangements for recognising patterns** (methods or arrangements for graph-reading or for converting the pattern of mechanical parameters, e.g. force or presence, into electrical signals [G06K 11/00](#); image or video recognition or understanding [G06V](#); speech recognition [G10L 15/00](#))

WARNING

Group [G06K 9/00](#) is impacted by reclassification into groups [G06V 10/00-G06V 10/98](#), [G06V 20/00-G06V 20/90](#), [G06V 30/00-G06V 30/424](#) and [G06V 40/00-G06V 40/70](#).

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

- 9/00496 . {Recognising patterns in signals and combinations thereof (analysing specific medical signals, e.g. bioelectric signals, blood pressure [A61B 5/00](#); analysis of chromatographic signals [G01N 30/86](#); processing radar and similar signals [G01S](#); processing seismic signals [G01V 1/28](#), [G01V 1/46](#); writer recognition, reading and verifying signatures [G06V 40/30](#); acoustic speech processing [G10L](#); transmission systems [H04B 1/00](#))}

- 9/00503 . . {Preprocessing, e.g. filtering (electrical circuits for filtering [H03H](#); adaptive filters [H03H 21/00](#); convolution-based filters [H03H 17/00](#), [H03H 21/00](#))}
- 9/0051 . . . {Denoising}
- 9/00516 {by applying a scale-space analysis, e.g. using wavelet analysis}
- 9/00523 . . {Feature extraction (arrangements for measuring frequencies and for spectral analysis [G01R 23/16](#); algorithms for spectral analysis, digital electric mathematical transforms *per se* [G06F 17/14](#))}
- 9/0053 . . . {by analysing the shape of a waveform, e.g. extracting parameters relating to peaks}
- 9/00536 . . {Classification; Matching (digital electric correlation [G06F 17/15](#); electronic classification and matching *per se* [G06K 9/62](#))}
- 9/00543 . . . {by matching peak patterns}
- 9/0055 . . . {by matching signal segments}
- 9/00557 {by plotting the signal segments against each other, e.g. analysing scattergrams}
- 9/00563 {by applying autoregressive analysis}
- 9/0057 . . {Source localisation; Inverse modelling (electroencephalography [A61B 5/369](#); source separation [G06K 9/624](#); image reconstruction from projection, e.g. tomography [G06T 11/003](#); beam formers in general [G10K 11/34](#); radio transmission systems for beam forming [H04B 7/04](#))}
- 9/62 . Methods or arrangements for pattern recognition using electronic means

WARNING

Group [G06K 9/62](#) is impacted by reclassification into groups [G06V 10/70](#), [G06V 10/766](#) and [G06V 30/19](#).

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

- 9/6201 . . {Matching; Proximity measures}

WARNING

Group [G06K 9/6201](#) is impacted by reclassification into groups [G06V 10/75](#) and [G06V 30/19007](#).

Groups [G06K 9/6201](#), [G06V 10/75](#) and [G06V 30/19007](#) should be considered in order to perform a complete search.

- 9/6215 . . . {Proximity measures, i.e. similarity or distance measures}

WARNING

Group [G06K 9/6215](#) is impacted by reclassification into groups [G06V 10/761](#) and [G06V 30/19093](#).

Groups [G06K 9/6215](#), [G06V 10/761](#) and [G06V 30/19093](#) should be considered in order to perform a complete search.

- 9/6217 . . . {Design or setup of recognition systems and techniques; Extraction of features in feature space; Clustering techniques; Blind source separation (regression analysis [G06F 17/18](#))}

WARNING

Group [G06K 9/6217](#) is impacted by reclassification into groups [G06V 10/70](#), [G06V 10/766](#) and [G06V 30/191](#).

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

- 9/6218 . . . {Clustering techniques}

WARNING

Group [G06K 9/6218](#) is impacted by reclassification into groups [G06V 10/762](#) and [G06V 30/19107](#).

Groups [G06K 9/6218](#), [G06V 10/762](#) and [G06V 30/19107](#) should be considered in order to perform a complete search.

- 9/6219 {Hierarchical techniques, i.e. dividing or merging pattern sets so as to obtain a dendrogram}

WARNING

Group [G06K 9/6219](#) is impacted by reclassification into groups [G06V 10/7625](#) and [G06V 30/19107](#).

Groups [G06K 9/6219](#), [G06V 10/7625](#) and [G06V 30/19107](#) should be considered in order to perform a complete search.

- 9/622 {Non-hierarchical partitioning techniques}

WARNING

Group [G06K 9/622](#) is impacted by reclassification into groups [G06V 10/763](#) and [G06V 30/19107](#).

Groups [G06K 9/622](#), [G06V 10/763](#) and [G06V 30/19107](#) should be considered in order to perform a complete search.

- 9/6221 {based on statistics}

WARNING

Group [G06K 9/6221](#) is impacted by reclassification into groups [G06V 10/763](#) and [G06V 30/19107](#).

Groups [G06K 9/6221](#), [G06V 10/763](#) and [G06V 30/19107](#) should be considered in order to perform a complete search.

- 9/6222 {with an adaptive number of clusters, e.g. ISODATA technique}

WARNING

Group [G06K 9/6222](#) is impacted by reclassification into groups [G06V 10/763](#) and [G06V 30/19107](#).

Groups [G06K 9/6222](#), [G06V 10/763](#) and [G06V 30/19107](#) should be considered in order to perform a complete search.

- 9/6223 {with a fixed number of clusters, e.g. K-means clustering}

WARNING

Group [G06K 9/6223](#) is impacted by reclassification into groups [G06V 10/763](#) and [G06V 30/19107](#).

Groups [G06K 9/6223](#), [G06V 10/763](#) and [G06V 30/19107](#) should be considered in order to perform a complete search.

- 9/6224 {based on graph theory, e.g. Minimum Spanning Trees [MST], graph cuts, spectral clustering techniques (graph embedding [G06K 9/6252](#); segmentation involving graph-based approaches for general image processing [G06T 7/162](#); segmentation of touching or overlapping patterns involving graph-based approaches [G06V 10/267](#))}

WARNING

Group [G06K 9/6224](#) is impacted by reclassification into groups [G06V 10/7635](#) and [G06V 30/19107](#).

Groups [G06K 9/6224](#), [G06V 10/7635](#) and [G06V 30/19107](#) should be considered in order to perform a complete search.

- 9/6226 {based on the modelling of probability density functions}

WARNING

Group [G06K 9/6226](#) is impacted by reclassification into groups [G06V 10/763](#) and [G06V 30/19107](#).

Groups [G06K 9/6226](#), [G06V 10/763](#) and [G06V 30/19107](#) should be considered in order to perform a complete search.

- 9/6227 {Selection of pattern recognition techniques, e.g. of classifiers in a multi-classifier system}

WARNING

Group [G06K 9/6227](#) is impacted by reclassification into groups [G06V 10/87](#) and [G06V 30/19113](#).

Groups [G06K 9/6227](#), [G06V 10/87](#) and [G06V 30/19113](#) should be considered in order to perform a complete search.

9/6228 . . . {Selecting the most significant subset of features ([G06K 9/6232](#) takes precedence)}

WARNING

Group [G06K 9/6228](#) is impacted by reclassification into groups [G06V 10/771](#) and [G06V 30/1912](#).

Groups [G06K 9/6228](#), [G06V 10/771](#) and [G06V 30/1912](#) should be considered in order to perform a complete search.

9/6229 {by using evolutionary computational techniques, e.g. genetic algorithms (genetic algorithms per se [G06N 3/126](#))}

WARNING

Group [G06K 9/6229](#) is impacted by reclassification into groups [G06V 10/771](#) and [G06V 30/1912](#).

Groups [G06K 9/6229](#), [G06V 10/771](#) and [G06V 30/1912](#) should be considered in order to perform a complete search.

9/623 {by ranking or filtering the set of features, e.g. using a measure of variance or of feature cross-correlation}

WARNING

Group [G06K 9/623](#) is impacted by reclassification into groups [G06V 10/771](#) and [G06V 30/1912](#).

Groups [G06K 9/623](#), [G06V 10/771](#) and [G06V 30/1912](#) should be considered in order to perform a complete search.

9/6231 {by evaluating different subsets according to an optimisation criteria such as class separability, e.g. forward selection, backward elimination (linear discriminant analysis [G06K 9/6234](#))}

WARNING

Group [G06K 9/6231](#) is impacted by reclassification into groups [G06V 10/771](#) and [G06V 30/1912](#).

Groups [G06K 9/6231](#), [G06V 10/771](#) and [G06V 30/1912](#) should be considered in order to perform a complete search.

9/6232 . . . {Extracting features by transforming the feature space, e.g. multidimensional scaling; Mappings, e.g. subspace methods}

WARNING

Group [G06K 9/6232](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).

Groups [G06K 9/6232](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6234 {based on a discrimination criterion, e.g. discriminant analysis (discriminant functions [G06K 9/6227](#))}

WARNING

Group [G06K 9/6234](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).

Groups [G06K 9/6234](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6235 {Rendering the within-class scatter matrix non-singular}

WARNING

Group [G06K 9/6235](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).

Groups [G06K 9/6235](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

2009/6236 {involving a first projection stage, e.g. Fisherface techniques}

WARNING

Group [G06K 2009/6236](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).

Groups [G06K 2009/6236](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

2009/6237 {involving an optimisation, e.g. using regularisation techniques}

WARNING

Group [G06K 2009/6237](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).

Groups [G06K 2009/6237](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

2009/6238 {involving a subspace restriction, e.g. nullspace techniques}

WARNING

Group [G06K 2009/6238](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).

Groups [G06K 2009/6238](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6239 {based on a naturality criterion, e.g. with non-negative factorisation or negative correlation ([matrix computation G06F 17/16](#))}

WARNING

Group [G06K 9/6239](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6239](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/624 {based on a separation criterion, e.g. independent component analysis}

WARNING

Group [G06K 9/624](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/624](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6242 {of statistical independence, i.e. minimising mutual information or maximising non-gaussianity}

WARNING

Group [G06K 9/6242](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6242](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6243 {of decorrelation or non-stationarity, e.g. minimising lagged cross-correlations}

WARNING

Group [G06K 9/6243](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6243](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6244 {enforcing sparsity or involving a domain transformation}

WARNING

Group [G06K 9/6244](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6244](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6245 {characterised by a domain transformation}

WARNING

Group [G06K 9/6245](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6245](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6246 {overcoming non-stationarity or permutations (using non-stationarity for separation [G06K 9/6244](#))}

WARNING

Group [G06K 9/6246](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6246](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6247 {based on an approximation criterion, e.g. principal component analysis}

WARNING

Group [G06K 9/6247](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6247](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6248 {nonlinearly, e.g. embedding a manifold in a Euclidean space ([principal curves G06K 9/6251](#))}

WARNING

Group [G06K 9/6248](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6248](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

9/6249 {based on a sparsity criterion, e.g. with an overcomplete basis (specific for source separation [G06K 9/6244](#); pictorial communication involving matching pursuit [H04N 19/97](#))}

WARNING

Group [G06K 9/6249](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6249](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

- 9/6251 {based on a criterion of topology preservation, e.g. multidimensional scaling, self-organising maps}

WARNING

Group [G06K 9/6251](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6251](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

- 9/6252 {involving differential geometry, e.g. embedding of pattern manifold}

WARNING

Group [G06K 9/6252](#) is impacted by reclassification into groups [G06V 10/7715](#) and [G06V 30/19127](#).
Groups [G06K 9/6252](#), [G06V 10/7715](#) and [G06V 30/19127](#) should be considered in order to perform a complete search.

- 9/6253 {User interactive design ([G06K 9/6263 takes precedence](#)); Environments; Tool boxes}

WARNING

Group [G06K 9/6253](#) is impacted by reclassification into group [G06V 10/945](#).
Groups [G06K 9/6253](#) and [G06V 10/945](#) should be considered in order to perform a complete search.

- 9/6254 {Interactive pattern learning with a human teacher}

WARNING

Group [G06K 9/6254](#) is impacted by reclassification into groups [G06V 10/7788](#) and [G06V 30/19133](#).
Groups [G06K 9/6254](#), [G06V 10/7788](#) and [G06V 30/19133](#) should be considered in order to perform a complete search.

- 9/6255 {Determining representative reference patterns, e.g. averaging or distorting patterns; Generating dictionaries, e.g. user dictionaries}

WARNING

Group [G06K 9/6255](#) is impacted by reclassification into groups [G06V 10/772](#) and [G06V 30/1914](#).
Groups [G06K 9/6255](#), [G06V 10/772](#) and [G06V 30/1914](#) should be considered in order to perform a complete search.

- 9/6256 {Obtaining sets of training patterns; Bootstrap methods, e.g. bagging, boosting}

WARNING

Group [G06K 9/6256](#) is impacted by reclassification into groups [G06V 10/774](#) and [G06V 30/19147](#).

Groups [G06K 9/6256](#), [G06V 10/774](#) and [G06V 30/19147](#) should be considered in order to perform a complete search.

- 9/6257 {characterised by the organisation or the structure of the process, e.g. boosting cascade (feature selection by floating search [G06K 9/6231](#))}

WARNING

Group [G06K 9/6257](#) is impacted by reclassification into groups [G06V 10/7747](#) and [G06V 30/19147](#).

Groups [G06K 9/6257](#), [G06V 10/7747](#) and [G06V 30/19147](#) should be considered in order to perform a complete search.

- 9/6259 {characterised by the incorporation of unlabelled data, e.g. multiple instance learning [MIL], semi-supervised techniques using expectation-maximisation [EM] or naïve labelling (EM techniques [G06K 9/6226](#); validation with "oracles" [G06K 9/6263](#))}

WARNING

Group [G06K 9/6259](#) is impacted by reclassification into groups [G06V 10/7753](#) and [G06V 30/19147](#).

Groups [G06K 9/6259](#), [G06V 10/7753](#) and [G06V 30/19147](#) should be considered in order to perform a complete search.

- 9/626 {Selecting classification rules}

WARNING

Group [G06K 9/626](#) is impacted by reclassification into groups [G06V 10/765](#) and [G06V 30/19153](#).

Groups [G06K 9/626](#), [G06V 10/765](#) and [G06V 30/19153](#) should be considered in order to perform a complete search.

- 9/6261 {partitioning the feature space}

WARNING

Group [G06K 9/6261](#) is impacted by reclassification into groups [G06V 10/765](#) and [G06V 30/19153](#).

Groups [G06K 9/6261](#), [G06V 10/765](#) and [G06V 30/19153](#) should be considered in order to perform a complete search.

9/6262 . . . {Validation, performance evaluation or active pattern learning techniques}

WARNING

Group [G06K 9/6262](#) is impacted by reclassification into groups [G06V 10/776](#), [G06V 10/778](#), [G06V 30/1916](#), [G06V 30/19167](#) and [G06V 30/302](#).

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

9/6263 {based on the feedback of a supervisor (relevance feedback in information retrieval [G06F 16/00](#))}

WARNING

Group [G06K 9/6263](#) is impacted by reclassification into groups [G06V 10/7784](#) and [G06V 30/19167](#).

Groups [G06K 9/6263](#), [G06V 10/7784](#) and [G06V 30/19167](#) should be considered in order to perform a complete search.

9/6264 {the supervisor being an automated "intelligent" module, e.g. "intelligent oracle"}

WARNING

Group [G06K 9/6264](#) is impacted by reclassification into groups [G06V 10/7788](#) and [G06V 30/19167](#).

Groups [G06K 9/6264](#), [G06V 10/7788](#) and [G06V 30/19167](#) should be considered in order to perform a complete search.

9/6265 {based on a specific statistical test}

WARNING

Group [G06K 9/6265](#) is impacted by reclassification into groups [G06V 10/7796](#) and [G06V 30/19167](#).

Groups [G06K 9/6265](#), [G06V 10/7796](#) and [G06V 30/19167](#) should be considered in order to perform a complete search.

9/6267 . . . {Classification techniques}

WARNING

Group [G06K 9/6267](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#).

Groups [G06K 9/6267](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6268 {relating to the classification paradigm, e.g. parametric or non-parametric approaches}

WARNING

Group [G06K 9/6268](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#).

Groups [G06K 9/6268](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6269 {based on the distance between the decision surface and training patterns lying on the boundary of the class cluster, e.g. support vector machines}

WARNING

Group [G06K 9/6269](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#).

Groups [G06K 9/6269](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/627 {based on distances between the pattern to be recognised and training or reference patterns}

WARNING

Group [G06K 9/627](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#).

Groups [G06K 9/627](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6271 {based on distances to prototypes}

WARNING

Group [G06K 9/6271](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#).

Groups [G06K 9/6271](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6272 {based on distances to cluster centroids}

WARNING

Group [G06K 9/6272](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#).

Groups [G06K 9/6272](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6273 {Smoothing the distance, e.g. Radial Basis Function Networks}

WARNING

Group [G06K 9/6273](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#). Groups [G06K 9/6273](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6274 {based on distances to neighbourhood prototypes, e.g. Restricted Coulomb Energy Networks}

WARNING

Group [G06K 9/6274](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#). Groups [G06K 9/6274](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6276 {based on distances to closest patterns, e.g. nearest neighbour classification}

WARNING

Group [G06K 9/6276](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#). Groups [G06K 9/6276](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6277 {based on a parametric (probabilistic) model, e.g. based on Neyman-Pearson lemma, likelihood ratio, receiver operating characteristic [ROC] curve plotting a false acceptance rate [FAR] versus a false reject rate [FRR] (segmentation involving probabilistic approaches for general image processing [G06T 7/143](#); segmentation of touching or overlapping patterns involving probabilistic approaches [G06V 10/26](#); image connectivity analysis involving probabilistic approaches, e.g. Markov Random Fields techniques, [G06V 10/457](#))}

WARNING

Group [G06K 9/6277](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#). Groups [G06K 9/6277](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6278 {Bayesian classification}

WARNING

Group [G06K 9/6278](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#). Groups [G06K 9/6278](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6279 {relating to the number of classes}

WARNING

Group [G06K 9/6279](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#). Groups [G06K 9/6279](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/628 {Multiple classes}

WARNING

Group [G06K 9/628](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#). Groups [G06K 9/628](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6281 {Piecewise classification, i.e. whereby each classification requires several discriminant rules}

WARNING

Group [G06K 9/6281](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#). Groups [G06K 9/6281](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6282 {Tree-organised sequential classifiers}

WARNING

Group [G06K 9/6282](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#). Groups [G06K 9/6282](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6284 {Single class perspective, e.g. one-against-all classification; Novelty detection; Outlier detection}

WARNING

Group [G06K 9/6284](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#). Groups [G06K 9/6284](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6285 . . . {relating to the decision surface}

WARNING

Group [G06K 9/6285](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#).

Groups [G06K 9/6285](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6286 {Linear, e.g. hyperplane}

WARNING

Group [G06K 9/6286](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#).

Groups [G06K 9/6286](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6287 {Non-linear, e.g. polynomial classifier ([G06K 9/6284](#) takes precedence; classifier with multiple radial basis functions [G06K 9/6273](#))}

WARNING

Group [G06K 9/6287](#) is impacted by reclassification into groups [G06V 10/764](#) and [G06V 30/19173](#).

Groups [G06K 9/6287](#), [G06V 10/764](#) and [G06V 30/19173](#) should be considered in order to perform a complete search.

9/6288 . . {Fusion techniques, i.e. combining data from various sources, e.g. sensor fusion ([data unmixing G06K 9/624](#); bootstrap techniques, e.g. boosting [G06K 9/6256](#); image matching [G06V 30/192](#); fusion of acoustic speaker inputs [G10L 17/10](#))}

WARNING

Group [G06K 9/6288](#) is impacted by reclassification into groups [G06V 10/80](#) and [G06V 30/1918](#).

Groups [G06K 9/6288](#), [G06V 10/80](#) and [G06V 30/1918](#) should be considered in order to perform a complete search.

9/6289 . . . {of input or preprocessed data (imaging spectrometers [G01J 3/2823](#); image fusion in general and biomedical image fusion [G06T 5/50](#); processing and conversion of colour signals [H04N 1/46](#))}

WARNING

Group [G06K 9/6289](#) is impacted by reclassification into groups [G06V 10/803](#) and [G06V 30/1918](#).

Groups [G06K 9/6289](#), [G06V 10/803](#) and [G06V 30/1918](#) should be considered in order to perform a complete search.

9/629 . . . {of extracted features}

WARNING

Group [G06K 9/629](#) is impacted by reclassification into groups [G06V 10/806](#) and [G06V 30/1918](#).

Groups [G06K 9/629](#), [G06V 10/806](#) and [G06V 30/1918](#) should be considered in order to perform a complete search.

9/6292 . . . {of classification results, e.g. of classification results related to same input data ([G06K 9/6256](#) takes precedence)}

WARNING

Group [G06K 9/6292](#) is impacted by reclassification into groups [G06V 10/809](#) and [G06V 30/1918](#).

Groups [G06K 9/6292](#), [G06V 10/809](#) and [G06V 30/1918](#) should be considered in order to perform a complete search.

9/6293 {of classification results relating to different input data, e.g. multimodal recognition}

WARNING

Group [G06K 9/6293](#) is impacted by reclassification into groups [G06V 10/811](#) and [G06V 30/1918](#).

Groups [G06K 9/6293](#), [G06V 10/811](#) and [G06V 30/1918](#) should be considered in order to perform a complete search.

2009/6294 . . . {belief theory, e.g. Dempster-Shafer}

WARNING

Group [G06K 2009/6294](#) is impacted by reclassification into groups [G06V 10/814](#) and [G06V 30/1918](#).

Groups [G06K 2009/6294](#), [G06V 10/814](#) and [G06V 30/1918](#) should be considered in order to perform a complete search.

2009/6295 . . . {fusion by voting}

WARNING

Group [G06K 2009/6295](#) is impacted by reclassification into groups [G06V 10/817](#) and [G06V 30/1918](#).

Groups [G06K 2009/6295](#), [G06V 10/817](#) and [G06V 30/1918](#) should be considered in order to perform a complete search.

9/6296 . . {Graphical models, e.g. Bayesian networks (probabilistic networks per se [G06N 7/005](#))}

WARNING

Group [G06K 9/6296](#) is impacted by reclassification into groups [G06V 10/84](#) and [G06V 30/19187](#).

Groups [G06K 9/6296](#), [G06V 10/84](#) and [G06V 30/19187](#) should be considered in order to perform a complete search.

- 9/6297 . . . {Markov models or related models, e.g. semi-Markov models; Markov random fields; networks embedding Markov models (segmentation involving probabilistic approaches for general image processing [G06T 7/143](#); segmentation of touching or overlapping patterns involving probabilistic approaches [G06V 10/26](#); image connectivity analysis involving probabilistic approaches, e.g. Markov Random Fields [G06V 10/457](#); application of Markov models to acoustic speech recognition [G10L 15/00](#))}
- WARNING**
- Group [G06K 9/6297](#) is impacted by reclassification into groups [G06V 10/85](#) and [G06V 30/19187](#).
- Groups [G06K 9/6297](#), [G06V 10/85](#) and [G06V 30/19187](#) should be considered in order to perform a complete search.
- 9/6298 . . {Statistical pre-processing, e.g. techniques for normalisation or restoring missing data}
- WARNING**
- Group [G06K 9/6298](#) is impacted by reclassification into groups [G06V 10/72](#) and [G06V 30/19193](#).
- Groups [G06K 9/6298](#), [G06V 10/72](#) and [G06V 30/19193](#) should be considered in order to perform a complete search.
- 11/00 Methods or arrangements for graph-reading or for converting the pattern of mechanical parameters, e.g. force or presence, into electrical signal** (combined with character or pattern recognition [G06K 9/00](#); feelers for copying devices on machine tools [B23Q 35/00](#); arrangements for measuring areas [G01B](#); measuring force [G01L](#); adapted as input devices to computers [G06F 3/00](#); systems for transmitting the position of an object with respect to a predetermined reference system, e.g. tele-autographic system, [G08C 21/00](#))
- WARNING**
- This group and its subgroups are no longer used for the classification of new documents as from 1 January 2006. Documents relating to methods and arrangements for input to a computer are classified under [G06F 3/033](#) and [G06F 3/041](#)
- 11/02 . Automatic curve followers {, i.e. arrangements in which an exploring member or beam is forced to follow the curve}
- 11/04 . . using an auxiliary scanning pattern
- 11/06 . Devices for converting the position of a manually-operated writing or tracing member into an electrical signal {(arrangements for converting the position or the displacement of a member into a coded form [G06F 3/03](#))}
- 13/00 Conveying record carriers from one station to another, e.g. from stack to punching mechanism** (conveying record carriers combined with another operation, e.g. with reading [G06K 17/00](#))
- 13/02 . the record carrier having longitudinal dimension comparable with transverse dimension, e.g. punched card
- 13/04 . . Details, e.g. flaps in card-sorting apparatus
- 13/05 . . . Capstans; Pinch rollers
- 13/06 . . Guiding cards; Checking correct operation of card-conveying mechanisms
- 13/063 . . . Aligning cards
- 13/067 . . . Checking presence, absence, correct position, or moving status of cards
- 13/07 . . Transporting of cards between stations
- 13/073 . . . with continuous movement
- 13/077 . . . with intermittent movement; Braking or stopping movement
- 13/08 . . Feeding or discharging cards
- 13/8006 . . . {using an arrangement for ejection of an inserted card}
- 13/8012 {the ejection arrangement utilizing a push bar for manipulation by hand in order to eject the inserted card}
- 13/8018 {the push bar comprising a pivotable push button}
- 13/8025 {the ejection arrangement being of the push-push kind}
- 13/8031 {the ejection arrangement comprising a slide, carriage or drawer}
- 13/8037 {the ejection arrangement using a heart-shaped cam}
- 13/8043 {from or back into the same magazine (automatic card files [G06K 17/0003](#))}
- 13/805 {using an arrangement for locking the inserted card}
- 13/8056 {the locking arrangement comprising a notch in the card and a complementary locking means in the card reading station}
- 13/8062 {the locking arrangement being of the rotate-slide and lock type, such as, e.g. common in mobile phones}
- 13/8068 {using an arrangement for keeping the feeding or insertion slot of the card station clean of dirt, or to avoid feeding of foreign or unwanted objects into the slot}
- 13/8075 {the arrangement comprising a shutter for blocking at least part of the card insertion slot}
- 13/8081 {the shutter arranged to open only if the record carrier has been authenticated to enter the insertion slot}
- 13/8087 {the arrangement comprising a size filter for filtering out only cards having the proper size}
- 13/8093 {the arrangement comprising means for cleaning the card upon insertion}
- 13/10 . . . from magazine to conveying arrangement
- 13/103 using mechanical means
- 13/107 using pneumatic means
- 13/12 . . . from conveying arrangement to magazine
- 13/14 . . . Card magazines, e.g. pocket, hopper
- 13/16 . . Handling flexible sheets, e.g. cheques
- 13/18 . the record carrier being longitudinally extended, e.g. punched tape
- 13/20 . . Details
- 13/22 . . . Capstans; Pinch rollers

- 13/24 . . Guiding of record carriers; Recognising end of record carrier
- 13/26 . . Winding-up or unwinding of record carriers; Driving of record carriers
- 13/28 . . . continuously
- 13/30 . . . intermittently
- 15/00 Arrangements for producing a permanent visual presentation of the output data {, e.g. computer output printers}(printing or plotting combined with another operation, e.g. with conveying, [G06K 17/00](#))**
- 15/002 . {Interacting with the operator}
- 15/005 . . {only locally}
- 15/007 . . {only remotely, e.g. at a host computer (dedicated computer interfaces to print systems [G06F 3/1201](#))}
- 15/02 . using printers
- 15/021 . . {Adaptations for printing on specific media}
- 15/022 . . . {for printing on continuous media, e.g. tapes}
- 15/023 . . . {for printing on transparent media}
- 15/024 . . . {for printing on segmented surfaces, e.g. sticker sheets, label rolls}
- 15/025 . . {Simulating output on another printing arrangement, e.g. proof output (matching two or more picture signal generators or two or more picture reproducers [H04N 1/6052](#))}
- 15/026 . . . {introduction of proof output parameters}
- 15/027 . . {Test patterns and calibration (arrangements for controlling or analysing printing mechanisms of typewriters or selective printing units [B41J 29/393](#) takes precedence; colour correction using test pattern analysis in general [H04N 1/6033](#))}
- 15/028 . . {by thermal printers}
- 15/029 . . . {using optical beams}
- 15/04 . . by rack-type printers
- 15/06 . . by type-wheel printers
- 15/07 . . . by continuously-rotating-type-wheel printers, e.g. rotating-type-drum printers
- 15/08 . . by flight printing with type font moving in the direction of the printed line, e.g. chain printers
- 15/10 . . by matrix printers {([G06K 15/028](#) takes precedence)}
- 15/102 . . . {using ink jet print heads}
- 15/105 {Multipass or interlaced printing}
- 15/107 {Mask selection}
- 15/12 . . by photographic printing {, e.g. by laser printers}
- 15/1204 . . . {involving the fast moving of an optical beam in the main scanning direction ([G06K 15/1233](#) - [G06K 15/129](#) take precedence)}
- 15/1209 {Intensity control of the optical beam ([G06K 15/1223](#) takes precedence)}
- 15/1214 {by feedback}
- 15/1219 {Detection, control or error compensation of scanning velocity or position, e.g. synchronisation ([G06K 15/1223](#) takes precedence)}
- 15/1223 {Resolution control, enlarging or reducing, edge or detail enhancement}
- 15/1228 . . . {involving the fast moving of a light beam in two directions ([G06K 15/1233](#) - [G06K 15/129](#) take precedence)}
- 15/1233 {using a cathode-ray tube or an optical-fibre tube}
- 15/1238 {simultaneously exposing more than one point}
- 15/1242 {on one main scanning line}
- 15/1247 {using an array of light sources, e.g. a linear array}
- 15/1252 {using an array of light modulators, e.g. a linear array}
- 15/1257 {on more than one main scanning line}
- 15/1261 {using an array of light sources}
- 15/1266 {using a moving array}
- 15/1271 {by light beam splitting}
- 15/1276 . . . {adding two or more images, e.g. texturing, shading, form overlay}
- 15/128 . . . {generating or processing printable items, e.g. characters}
- 15/1285 . . . {Holographic scanning (in general [G02B](#))}
- 15/129 . . . {Colour printing}
- 15/1295 . . . {using a particular photoreceptive medium}
- 15/14 . . by electrographic printing, e.g. xerography; by magnetographic printing {([G06K 15/12](#) takes precedence)}
- 15/16 . . Means for paper feeding or form feeding
- 15/18 . . {Conditioning data for presenting it to the physical printing elements (for data conditioning specific to a type of printer see subgroups [G06K 15/028](#) - [G06K 15/14](#); print job translation or parsing [G06F 3/1244](#))}
- 15/1801 . . . {Input data handling means}
- 15/1802 {Receiving generic data, e.g. fonts, colour palettes}
- 15/1803 {Receiving particular commands}
- 15/1805 {Receiving printer configuration commands}
- 15/1806 {Receiving job control commands}
- 15/1807 {relating to the print image preparation}
- 15/1809 {relating to the printing process}
- 15/181 {Receiving print data characterized by its formatting, e.g. particular page description languages}
- 15/1811 {including high level document description only}
- 15/1813 {Page description language recognition}
- 15/1814 {including print-ready data, i.e. data already matched to the printing process}
- 15/1815 {Receiving print data in mixed format}
- 15/1817 {Buffers}
- 15/1818 {Adaptations for accepting data from more than one source ([managing interfaces G06K 15/4045](#))}
- 15/1819 {for a same print job}
- 15/1821 {Sending feedback on the reception process to the data source, e.g. indication of full buffer}
- 15/1822 {Analysing the received data before processing}
- 15/1823 {for evaluating the resources needed, e.g. rasterizing time, ink, paper stock}
- 15/1825 {Adapting the print data to an output condition, e.g. object trapping ([trapping on rasterized data H04N 1/58](#))}
- 15/1826 {Object trapping}
- 15/1827 {Accessing generic data, e.g. fonts}

- 15/1828 {characterized by the kind of storage accessed}
- 15/183 {Removable memories, e.g. font cartridges}
- 15/1831 {characterized by the format of the data}
- 15/1832 {Compressed bitmaps}
- 15/1834 {Outline coded data}
- 15/1835 {Transforming generic data}
- 15/1836 {Rasterization}
- 15/1838 {from outline-coded data}
- 15/1839 {from skeleton-coded data}
- 15/184 {from compressed bitmap data}
- 15/1842 {Geometric transformations, e.g. on raster data}
- 15/1843 {Changing size or raster resolution}
- 15/1844 {Anti-aliasing raster data ([G06K 15/1843 takes precedence](#))}
- 15/1846 {Depleting generic raster data, e.g. characters ([G06K 15/1843 takes precedence](#))}
- 15/1847 {with provisions for image feature conservation or enhancement, e.g. character edge}
- 15/1848 . . . {Generation of the printable image}
- 15/1849 . . . {using an intermediate representation, e.g. a list of graphical primitives}
- 15/1851 {parted in a plurality of segments per page}
- 15/1852 {involving combining data of different types}
- 15/1853 {Combining raster data of different resolutions}
- 15/1855 {Combining raster data and graphic primitives}
- 15/1856 {characterized by its workflow}
- 15/1857 {involving parallel processing in the same printing apparatus}
- 15/1859 {involving data processing distributed amongst different data processing apparatus}
- 15/186 {taking account of feedback from an output condition, e.g. available inks, time constraints}
- 15/1861 {taking account of a limited available memory space or rasterization time}
- 15/1863 {by rasterizing in sub-page segments}
- 15/1864 {by reducing the depth of some image elements' definition}
- 15/1865 {by compressing the rasterized print data}
- 15/1867 . . . {Post-processing of the composed and rasterized print image ([scanning, transmission or reproduction of documents H04N 1/00](#))}
- 15/1868 {for fitting to an output condition, e.g. paper colour or format}
- 15/1869 {Depleting the print image}
- 15/1871 {with provisions for image features conservation or enhancement, e.g. conservation or enhancement of zone edges}
- 15/1872 {Image enhancement}
- 15/1873 {Increasing spatial resolution; Anti-aliasing}
- 15/1874 {with provisions for treating some of the print data differently}
- 15/1876 {Decreasing spatial resolution; Dithering}
- 15/1877 {with provisions for treating some of the print data differently}
- 15/1878 {Adjusting colours ([image colour correction or control for documents in general H04N 1/60](#))}
- 15/188 {with provisions for treating some of the print data differently}
- 15/1881 {Halftoning ([halftoning of still images in general H04N 1/405, H04N 1/52](#))}
- 15/1882 {involving operator action}
- 15/1884 {for choosing a level of output quality}
- 15/1885 {for modifying the layout of a document}
- 15/1886 {Storage of the print image data or of parts thereof}
- 15/1888 {Storage of image elements as generic data}
- 15/1889 {Merging with other data}
- 15/189 {adding a background, e.g. a pattern}
- 15/1892 {adding a digitally readable background pattern}
- 15/1893 {Form merging}
- 15/1894 . . . {Outputting the image data to the printing elements}
- 15/1896 {by means of alternately addressed storages}
- 15/1897 {while merging on-the-fly with other data}
- 15/1898 {while adapting the order of the data to the printing elements' arrangement, e.g. row-to-column conversion}
- 15/22 . . . using plotters
- 15/225 . . {using optical plotters}
- 15/40 . . {Details not directly involved in printing, e.g. machine management, management of the arrangement as a whole or of its constitutive parts ([computer driven print job management G06F 3/1237](#))}
- 15/4005 . . {Sharing resources or data with other data processing systems; Preparing such data ([for distributed printing G06K 15/1859](#))}
- 15/401 . . . {Sharing memory space}
- 15/4015 . . . {Sharing generic data descriptions, e.g. fonts, colour palettes, rasterized objects}
- 15/402 . . . {Sharing data concerning the arrangement's configuration or current state ([for managing optional units G06K 15/4025](#))}
- 15/4025 . . {Managing optional units, e.g. sorters, document feeders}
- 15/403 . . . {handling the outputted documents, e.g. staplers, sorters}
- 15/4035 {Managing mailboxes}
- 15/404 {Managing other optional outputs, e.g. collators, staplers}
- 15/4045 . . {Managing the interface to the data source, e.g. choosing an interface for data reception}
- 15/405 . . . {Choosing a data source, e.g. on a network}
- 15/4055 . . {Managing power consumption, e.g. standby mode ([computer driven power saving management for a printer G06F 3/1221; power saving in a data processing device in general G06F 1/32](#))}
- 15/406 . . . {Wake-up procedures ([start-up of a laser scanner G06K 15/1219](#))}

- 15/4065 . . {Managing print media, e.g. determining available sheet sizes ([feeding means G06K 15/16](#))}
- 15/407 . . {Managing marking material, e.g. checking available colours}
- 15/4075 . . . {Determining remaining quantities of ink or toner}
- 15/408 . . {Handling exceptions, e.g. faults ([computer driven error handling and recovery for a printer G06F 3/1234](#))}
- 15/4085 . . . {Handling paper jams}
- 15/409 . . . {Handling power failures}
- 15/4095 . . {Secure printing ([computer driven secure printing G06F 3/1238](#))}
- 17/00 Methods or arrangements for effecting co-operative working between equipments covered by two or more of main groups [G06K 1/00 - G06K 15/00](#), e.g. automatic card files incorporating conveying and reading operations**
- 17/0003 . {Automatic card files incorporating selecting, conveying and possibly reading and/or writing operations}
- 17/0006 . . {with random access selection of a record carrier from the card-file, e.g. the carriers are suspended on the selection device which in part of the card magazine}
- 17/0009 . . {with sequential access selection of a record carrier from the card-file, e.g. relative movement between selecting device and card-file}
- 17/0012 . . {with more than one selection steps, e.g. selection of a record carrier from a selected compartment of a compartmented storage ([storage devices for articles B65G 1/0407](#))}
- 17/0016 . {Selecting or retrieving of images by means of their associated code-marks, e.g. coded microfilm or microfiche ([microfilm reading G03B 21/11](#); [computers therefor G06F 16/00](#); [teaching devices G09B 5/02](#); [accessing record carriers G11B 27/002](#); [static digital stores using optical elements G11C 13/04](#); [intermediate storage of facsimile picture signals H04N 1/21](#))}
- 17/0019 . . {for images on filmstrips}
- 17/0022 . {arrangements or provisions for transferring data to distant stations, e.g. from a sensing device ("[transfer between computer elements G06F 13/00](#)"; [data-transmission H04L](#))}
- 17/0025 . . {the arrangement consisting of a wireless interrogation device in combination with a device for optically marking the record carrier}
- 17/0029 . . {the arrangement being specially adapted for wireless interrogation of grouped or bundled articles tagged with wireless record carriers}
- 17/0032 . {Apparatus for automatic testing and analysing marked record carriers, used for examinations of the multiple choice answer type ([teaching apparatus working with questions and answers G09B 7/00](#))}
- 19/00 Record carriers for use with machines and with at least a part designed to carry digital markings**
- 19/005 . {the record carrier comprising an arrangement to facilitate insertion into a holding device, e.g. an arrangement that makes the record carrier fit into an etui or a casing ([ticket holders A45C 11/18](#))}
- 19/02 . characterised by the selection of materials, e.g. to avoid wear during transport through the machine
- 19/022 . . {Processes or apparatus therefor}
- 19/025 . . {the material being flexible or adapted for folding, e.g. paper or paper-like materials used in luggage labels, identification tags, forms or identification documents carrying RFIDs ([methods for testing the genuineness of valuable papers, e.g. banknotes or passports G07D 7/00](#); [constructional features of booklets and the like B42D](#))}
- 19/027 . . {the material being suitable for use as a textile, e.g. woven-based RFID-like labels designed for attachment to laundry items ([markings attached to laundry items in general D06F 93/00](#))}
- 19/04 . characterised by the shape
- 19/041 . . {Constructional details ([G06K 19/06 takes precedence](#))}
- 19/042 . . . {the record carrier having a form factor of a credit card and including a small sized disc, e.g. a CD or DVD ([disc shaped data carriers in general, see G11B 20/00 and G11B 23/00](#))}
- 19/044 {comprising galvanic contacts for contacting an integrated circuit chip thereon}
- 19/045 {the record carrier being of the non-contact type, e.g. RFID, and being specially adapted for attachment to a disc, e.g. a CD or DVD}
- 19/047 . . . {the record carrier being shaped as a coin or a gambling token}
- 19/048 . . . {the record carrier being shaped as a key}
- 19/06 . characterised by the kind of the digital marking, e.g. shape, nature, code
- 19/06009 . . {with optically detectable marking ([G06K 19/063](#), [G06K 19/08 take precedence](#))}
- 19/06018 {one-dimensional coding}
- 19/06028 {using bar codes}
- 19/06037 {multi-dimensional coding}
- 19/06046 {Constructional details}
- 19/06056 {the marking comprising a further embedded marking, e.g. a 1D bar code with the black bars containing a smaller sized coding}
- 19/06065 {the marking being at least partially represented by holographic means ([holographic marking in general, see G06K 19/16](#))}
- 19/06075 {the marking containing means for error correction}
- 19/06084 {the marking being based on nanoparticles or microbeads}
- 19/06093 {the marking being constructed out of a plurality of similar markings, e.g. a plurality of barcodes randomly oriented on an object}
- 19/06103 {the marking being embedded in a human recognizable image, e.g. a company logo with an embedded two-dimensional code}
- 19/06112 {the marking being simulated using a light source, e.g. a barcode shown on a display or a laser beam with time-varying intensity profile}
- 19/06121 {the marking having been punched or cut out, e.g. a barcode machined in a metal work-piece}
- 19/06131 {the marking comprising a target pattern, e.g. for indicating the center of the bar code or for helping a bar code reader to properly orient the scanner or to retrieve the bar code inside of an image}

19/0614	. . . . {the marking being selective to wavelength, e.g. color barcode or barcodes only visible under UV or IR (methods or arrangements for sensing record carriers using a selected wavelength, see G06K 7/12)}	19/0711	. . . . . {the source being mechanical or acoustical}
19/0615	. . . . {the marking being of the rewritable type, e.g. thermo-chromic barcodes}	19/0712	. . . . . {the arrangement being capable of triggering distinct operating modes or functions dependent on the strength of an energy or interrogation field in the proximity of the record carrier (active means for hindering electromagnetic reading or writing G06K 19/07336)}
19/06159	. . . . {the marking being relief type, e.g. three-dimensional bar codes engraved in a support}	19/0713	. . . . . {the arrangement including a power charge pump}
19/06168	. . . . {the marking being a concentric barcode}	19/0715	. . . . . {the arrangement including means to regulate power transfer to the integrated circuit}
19/06178	. . . . {the marking having a feature size being smaller than can be seen by the unaided human eye}	19/0716	. . . . {at least one of the integrated circuit chips comprising a sensor or an interface to a sensor}
19/06187	. . {with magnetically detectable marking}	19/0717	. . . . . {the sensor being capable of sensing environmental conditions such as temperature history or pressure}
19/06196	. . . {Constructional details}	19/0718	. . . . . {the sensor being of the biometric kind, e.g. fingerprint sensors (fingerprint sensors in general, see G06K 9/00; biometric access-control systems in general, see G07C 9/00)}
19/06206	. . . {the magnetic marking being emulated}	19/0719	. . . . . {at least one of the integrated circuit chips comprising an arrangement for application selection, e.g. an acceleration sensor or a set of radio buttons (application selection on smart cards using pure software control, see G07F 7/10)}
2019/06215	. . {Aspects not covered by other subgroups}	19/072	. . . . . {the record carrier comprising a plurality of integrated circuit chips}
2019/06225	. . . {using wavelength selection, e.g. colour code}	19/0721	. . . . . {the plurality of chips mutually cooperating so as to represent itself to the world as a single entity}
2019/06234	. . . {miniature-code}	19/0722	. . . . . {comprising an arrangement for testing the record carrier}
2019/06243	. . . {concentric-code}	19/0723	. . . . . {the record carrier comprising an arrangement for non-contact communication, e.g. wireless communication circuits on transponder cards, non-contact smart cards or RFIDs}
2019/06253	. . . {for a specific application}	19/0724	. . . . . {the arrangement being a circuit for communicating at a plurality of frequencies, e.g. for managing time multiplexed communication over at least two antennas of different types}
2019/06262	. . . {with target- or other orientation-indicating feature}	19/0725	. . . . . {the arrangement being a circuit for emulating a plurality of record carriers, e.g. a single RFID tag capable of representing itself to a reader as a cloud of RFID tags}
2019/06271	. . . {Relief-type marking}	19/0726	. . . . . {the arrangement including a circuit for tuning the resonance frequency of an antenna on the record carrier}
2019/06281	. . . {rewritable}	19/0727	. . . . . {the arrangement being a circuit facilitating integration of the record carrier with a hand-held device such as a smart phone or PDA}
2019/0629	. . . {Holographic, diffractive or retroreflective recording}	19/0728	. . . . . {the arrangement being an optical or sound-based communication interface}
19/063	. . the carrier being marginally punched or notched, e.g. having elongated slots		
19/067	. . Record carriers with conductive marks, printed circuits or semiconductor circuit elements, e.g. credit or identity cards {also with resonating or responding marks without active components}		
19/0672	. . . {with resonating marks}		
19/0675	. . . . {the resonating marks being of the surface acoustic wave [SAW] kind (SAW devices per se H03H 9/64)}		
19/0677	. . . . {the record carrier being programmable}		
19/07	. . . with integrated circuit chips		
19/0701	. . . . {at least one of the integrated circuit chips comprising an arrangement for power management}		
19/0702	. . . . . {the arrangement including a battery}		
19/0703	. . . . . {the battery being onboard of a handheld device, e.g. a smart phone or PDA}		
19/0704	. . . . . {the battery being rechargeable, e.g. solar batteries}		
19/0705	. . . . . {the battery being connected to a power saving arrangement}		
19/0706	. . . . . {the battery being replaceable}		
19/0707	. . . . . {the arrangement being capable of collecting energy from external energy sources, e.g. thermocouples, vibration, electromagnetic radiation (G06K 19/0702 takes precedence)}		
19/0708	. . . . . {the source being electromagnetic or magnetic}		
19/0709	. . . . . {the source being an interrogation field}		
19/071	. . . . . {the source being a field other than an interrogation field, e.g. WLAN, cellular phone network}		

19/073	. . . .	Special arrangements for circuits, e.g. for protecting identification code in memory (protection against unauthorised use of computer memory G06F 12/14)	19/07722	. . . . .	{the record carrier being multilayered, e.g. laminated sheets (flat articles in general, see B32B 37/00)}
19/07309	. . . . .	{Means for preventing undesired reading or writing from or onto record carriers}	19/07724	. . . . .	{the record carrier being at least partially made by a molding process (molding in general B29C 45/14)}
19/07318	. . . . .	{by hindering electromagnetic reading or writing (jamming of communication, counter-measures H04K 3/00; secret communication H04K 1/00)}	19/07726	. . . . .	{the record comprising means for indicating first use, e.g. a frangible layer}
19/07327	. . . . .	{Passive means, e.g. Faraday cages (Faraday-type protection of electric circuits in general H05K 9/00)}	19/07728	. . . . .	{the record carrier comprising means for protection against impact or bending, e.g. protective shells or stress-absorbing layers around the integrated circuit}
19/07336	. . . . .	{Active means, e.g. jamming or scrambling of the electromagnetic field}	19/0773	. . . . .	{the record carrier comprising means to protect itself against external heat sources}
19/07345	. . . . .	{by activating or deactivating at least a part of the circuit on the record carrier, e.g. ON/OFF switches}	19/07732	. . . . .	{the record carrier having a housing or construction similar to well-known portable memory devices, such as SD cards, USB or memory sticks (housings for electrical equipment in general, see H05K 5/02)}
19/07354	. . . . .	{by biometrically sensitive means, e.g. fingerprint sensitive (fingerprint sensors in general G06V 40/12; biometrically activated access control G07C 9/25)}	19/07733	. . . . .	{the record carrier containing at least one further contact interface not conform ISO-7816}
19/07363	. . . . .	{by preventing analysis of the circuit, e.g. dynamic or static power analysis or current analysis}	19/07735	. . . . .	{the record carrier comprising means for protecting against electrostatic discharge}
19/07372	. . . . .	{by detecting tampering with the circuit}	19/07737	. . . . .	{the record carrier consisting of two or more mechanically separable parts}
19/07381	. . . . .	{with deactivation or otherwise incapacitation of at least a part of the circuit upon detected tampering}	19/07739	. . . . .	{comprising a first part capable of functioning as a record carrier on its own and a second part being only functional as a form factor changing part, e.g. SIM cards type ID 0001, removably attached to a regular smart card form factor}
19/0739	. . . . .	{the incapacitated circuit being part of an antenna}	19/07741	. . . . .	{comprising a first part operating as a regular record carrier and a second attachable part that changes the functional appearance of said record carrier, e.g. a contact-based smart card with an adapter part which, when attached to the contact card makes the contact card function as a non-contact card}
19/077	. . . .	Constructional details, e.g. mounting of circuits in the carrier	19/07743	. . . . .	{External electrical contacts}
19/07701	. . . . .	{the record carrier comprising an interface suitable for human interaction}	19/07745	. . . . .	{Mounting details of integrated circuit chips}
19/07703	. . . . .	{the interface being visual}	19/07747	. . . . .	{at least one of the integrated circuit chips being mounted as a module}
19/07705	. . . . .	{the visual interface being a single light or small number of lights capable of being switched on or off, e.g. a series of LEDs}	19/07749	. . . . .	{the record carrier being capable of non-contact communication, e.g. constructional details of the antenna of a non-contact smart card}
19/07707	. . . . .	{the visual interface being a display, e.g. LCD or electronic ink}	19/0775	. . . . .	{arrangements for connecting the integrated circuit to the antenna}
19/07709	. . . . .	{the interface being a keyboard}	19/07752	. . . . .	{using an interposer}
19/07711	. . . . .	{the interface being an audio interface}	19/07754	. . . . .	{the connection being galvanic}
19/07713	. . . . .	{the interface, upon reception of an interrogation signal, being capable of signaling to indicate its position to a user or a detection device}	19/07756	. . . . .	{the connection being non-galvanic, e.g. capacitive}
19/07715	. . . . .	{the interface being used to indicate that the record carrier is active, e.g. a blinking light to indicate that the record carrier is busy communicating with a secondary device or busy computing}	19/07758	. . . . .	{arrangements for adhering the record carrier to further objects or living beings, functioning as an identification tag}
19/07716	. . . . .	{the record carrier comprising means for customization, e.g. being arranged for personalization in batch}			
19/07718	. . . . .	{the record carrier being manufactured in a continuous process, e.g. using endless rolls}			
19/0772	. . . . .	{Physical layout of the record carrier}			

19/0776	. . . . .	{the adhering arrangement being a layer of adhesive, so that the record carrier can function as a sticker}	19/07798	. . . . .	{part of the antenna or the integrated circuit being adapted for rupturing or breaking, e.g. record carriers functioning as sealing devices for detecting not-authenticated opening of containers (electronic seals G09F 3/03)}
19/07762	. . . . .	{the adhering arrangement making the record carrier wearable, e.g. having the form of a ring, watch, glove or bracelet (record carriers for insertion in the human body for medical purposes A61B 90/00 ; record carriers adapted for attachment to animals A01K 11/00)}	19/08	. . .	using markings of different kinds {or more than one marking of the same kind} in the same record carrier, e.g. one marking being sensed by optical and the other by magnetic means
19/07764	. . . . .	{the adhering arrangement making the record carrier attachable to a tire (tire temperature or pressur control arrangements, see B60C 23/00)}	19/083	. . .	{Constructional details}
19/07766	. . . . .	{comprising at least a second communication arrangement in addition to a first non-contact communication arrangement}	19/086	. . . .	{with markings consisting of randomly placed or oriented elements, the randomness of the elements being useable for generating a unique identifying signature of the record carrier, e.g. randomly placed magnetic fibers or magnetic particles in the body of a credit card}
19/07767	. . . . .	{the first and second communication means being two different antennas types, e.g. dipole and coil type, or two antennas of the same kind but operating at different frequencies}	19/10	. . .	at least one kind of marking being used for authentication, e.g. of credit or identity cards (verification of coded identity or credit cards in mechanisms actuated by them G07F 7/12)
19/07769	. . . . .	{the further communication means being a galvanic interface, e.g. hybrid or mixed smart cards having a contact and a non-contact interface}	19/12	. . . .	the marking being sensed by magnetic means
19/07771	. . . . .	{the record carrier comprising means for minimising adverse effects on the data communication capability of the record carrier, e.g. minimising Eddy currents induced in a proximate metal or otherwise electromagnetically interfering object}	19/14	. . . .	the marking being sensed by radiation
19/07773	. . . . .	{Antenna details (antennas for wireless devices, e.g. RFID tags, in general H01Q 1/22)}	19/145	. . . . .	{at least one of the further markings being adapted for galvanic or wireless sensing, e.g. an RFID tag with both a wireless and an optical interface or memory, or a contact type smart card with ISO 7816 contacts and an optical interface or memory}
19/07775	. . . . .	{the antenna being on-chip}	19/16	. . . .	the marking being a hologram or diffraction grating
19/07777	. . . . .	{the antenna being of the inductive type}	19/18	. . . .	Constructional details
19/07779	. . . . .	{the inductive antenna being a coil}	21/00		Information retrieval from punched cards designed for manual use or handling by machine (G06K 19/00 takes precedence; detection or correction of errors by rescanning patterns G06V 10/98; checking correct operation of card-conveying mechanisms G06K 13/06); Apparatus for handling such cards, e.g. marking or correcting
19/07781	. . . . .	{the coil being fabricated in a winding process}	21/002	. . .	{Selecting of marginally notched cards (card filling arrangements B42F 17/00)}
19/07783	. . . . .	{the coil being planar}	21/005	. . .	{the selected cards being displaced laterally relative to the remaining stationary card-file}
19/07784	. . . . .	{the inductive antenna consisting of a plurality of coils stacked on top of one another}	21/007	. . .	{the selected cards being restrained and the remaining card-file being laterally displaced}
19/07786	. . . . .	{the antenna being of the HF type, such as a dipole}	21/02	. . .	in which coincidence of markings is sensed mechanically, e.g. by needle
19/07788	. . . . .	{the antenna being of the capacitive type}	21/04	. . .	in which coincidence of markings is sensed optically, e.g. peek-a-boo system
19/0779	. . . . .	{the antenna being foldable or folded}	21/06	. . .	Apparatus or tools adapted for slotting or otherwise marking information-retrieval cards
19/07792	. . . . .	{the antenna adapted for extending in three dimensions}	21/08	. . .	Apparatus or tools for correcting punching or slotting errors {and regeneration of record carriers}
19/07794	. . . . .	{the record carrier comprising a booster or auxiliary antenna in addition to the antenna connected directly to the integrated circuit}	21/085	. . .	{for punched tapes}
19/07796	. . . . .	{arrangements on the record carrier to allow stacking of a plurality of similar record carriers, e.g. to avoid interference between the non-contact communication of the plurality of record carriers}	2207/00		Other aspects
			2207/1011	. . .	Aiming
			2207/1012	. . .	Special detection of object
			2207/1013	. . .	Multi-focal
			2207/1015	. . .	Hologram
			2207/1016	. . .	Motor control or optical moving unit control
			2207/1017	. . .	Programmable

2207/1018 . Source control

2215/00 Arrangements for producing a permanent visual presentation of the output data

2215/0002 . Handling the output data

2215/0005 . . Accepting output data; Preparing data for the controlling system

2215/0008 . . . Downloading generic data

2215/0011 . . . characterised by a particular command or data flow, e.g. Page Description Language, configuration commands

2215/0014 . . . Transforming the printer input data into internal codes

2215/0017 . . . Preparing data for the controlling system, e.g. status, memory data

2215/002 . . Generic data access

2215/0022 . . . characterised by the storage means used

2215/0025 Removable memories, e.g. cartridges

2215/0028 . . . characterised by the format per se

2215/0031 Compressed bit maps

2215/0034 Outline coding

2215/0037 . . . depending on an output condition, e.g. size, resolution

2215/004 . . Generic data transformation

2215/0042 . . . Rasterisation

2215/0045 Converting outline to bitmap

2215/0048 Converting skeleton to bitmap

2215/0051 from compressed bitmap, e.g. run length

2215/0054 . . . Geometric transformations, e.g. on rasterised data

2215/0057 Sizing and resolution changes

2215/006 . . . Anti-aliasing raster data

2215/0062 . . combining generic and host data, e.g. filling a raster

2215/0065 . . . Page or partial page composition

2215/0068 Line composition, e.g. kerning

2215/0071 . . . Post-treatment of the composed image, e.g. compression, rotation

2215/0074 Depleting the image

2215/0077 . . Raster outputting to the print element(s)

2215/008 . . . from more than one raster memory

2215/0082 . Architecture adapted for a particular function

2215/0085 . . Error recovery

2215/0088 . . Collated printing

2215/0091 . . Outputting only video data, e.g. Hard copy of CRT display

2215/0094 . . Colour printing

2215/0097 . . Printing on special media, e.g. labels, envelopes

2215/101 . involving the use of ink jets

2215/111 . with overlapping swaths