

EUROPEAN PATENT OFFICE
U.S. PATENT AND TRADEMARK OFFICE

CPC NOTICE OF CHANGES 574

DATE: JANUARY 1, 2019

PROJECT RP0575

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

<u>Action</u>	<u>Subclass</u>	<u>Group(s)</u>
SCHEME:		
Symbols Deleted:	G06F	15/18
	G06N	99/002, 99/005
Symbols New:	G06N	10/00
	G06N	20/00, 20/10, 20/20
Titles Changed:	G05B	13/00
	G06N	3/00, 3/006, 3/008, 3/02, 3/0409
	G06N	5/00, 5/003, 5/02, 5/022, 5/025, 5/043, 5/046, 5/047
	G06N	7/02
Indents Changed:	G06N	5/025
Warnings New:	G06N	20/00
	G06N	20/10
	G06N	20/20
DEFINITIONS:		
Definitions Deleted: (no frozen (F) symbol definitions should be deleted)	G06F	15/18
	G06N	99/002, 99/005
Definitions New:	G06N	10/00
	G06N	20/00, 20/20
Definitions Modified:	G05B	13/00
	G06N	3/00, 3/002, 3/004, 3/006, 3/008, 3/02, 3/0418, 3/0427, 3/0436, 3/0472, 3/061, 3/063, 3/0635, 3/067, 3/0675, 3/086, 3/10, 3/105, 3/12, 3/123, 3/126
	G06N	5/00, 5/003, 5/006, 5/02, 5/04, 5/042, 5/045, 5/048
	G06N	7/00, 7/005, 7/02, 7/04, 7/08
	G06N	99/00, 99/007

The following subclasses/groups are also impacted by this Notice of Changes (indicate subclasses/groups outside of the project scope, such as those listed in the CRL):

G06E1/00, G06E3/00, G06J, G06J 3/00, G06K9/62, G06Q10/06395, G06Q10/067, G08G1/0104, H01L27/18, H01L39/00

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

1. CLASSIFICATION SCHEME CHANGES

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

2. DEFINITIONS

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

- 3. REVISION CONCORDANCE LIST (RCL)
- 4. CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)
- 5. CHANGES TO THE CROSS-REFERENCE LIST (CRL)

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1. CLASSIFICATION SCHEME CHANGES

A. New, Modified or Deleted Group(s)**SUBCLASS G05B - CONTROL OR REGULATING SYSTEMS IN GENERAL; FUNCTIONAL ELEMENTS OF SUCH SYSTEMS; MONITORING OR TESTING ARRANGEMENTS FOR SUCH SYSTEMS OR ELEMENTS**

<u>Type*</u>	<u>Symbol</u>	<u>Indent Level Number of dots (e.g. 0, 1, 2)</u>	<u>Title</u> <u>“CPC only” text should normally be enclosed in {curly brackets}**</u>	<u>Transferred to#</u>
M	G05B 13/00	0	Adaptive control systems, i.e. systems automatically adjusting themselves to have a performance which is optimum according to some preassigned criterion (G05B 19/00 takes precedence; machine learning G06N 20/00)	

SUBCLASS G06F - ELECTRIC DIGITAL DATA PROCESSING

<u>Type*</u>	<u>Symbol</u>	<u>Indent Level Number of dots (e.g. 0, 1, 2)</u>	<u>Title</u> <u>“CPC only” text should normally be enclosed in {curly brackets}**</u>	<u>Transferred to#</u>
D	G06F 15/18	1	in which a program is changed according to experience gained by the computer itself during a complete run; Learning machines (adaptive control systems G05B 13/00; artificial intelligence G06N)	<administrative transfer to G06N 20/00>

SUBCLASS G06N - COMPUTER SYSTEMS BASED ON SPECIFIC COMPUTATIONAL MODELS

<u>Type*</u>	<u>Symbol</u>	<u>Indent Level Number of dots (e.g. 0, 1, 2)</u>	<u>Title</u> <u>“CPC only” text should normally be enclosed in {curly brackets}**</u>	<u>Transferred to#</u>
M	G06N 3/00	0	Computer systems based on biological models	
U	G06N 3/004	1	{Artificial life, i.e. computers simulating life}	
M	G06N 3/006	2	{based on simulated virtual individual or collective life forms, e.g. single "avatar", social simulations, virtual worlds or particle swarm optimisation}	
M	G06N 3/008	2	{based on physical entities controlled by simulated intelligence so as to replicate intelligent life forms, e.g. robots replicating pets or humans in their appearance or behavior}	

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Type*	Symbol	Indent Level Number of dots (e.g. 0, 1, 2)	Title “CPC only” text should normally be enclosed in curly brackets**	Transferred to#
M	G06N 3/02	1	using neural network models	
U	G06N 3/04	2	Architectures, e.g. interconnection topology	
M	G06N 3/0409	3	{Adaptive resonance theory [ART] networks}	
M	G06N 5/00	0	Computer systems using knowledge-based models	
M	G06N 5/003	1	{Dynamic search techniques; Heuristics; Dynamic trees; Branch-and-bound}	
U	G06N 5/006	2	{Automatic theorem proving}	
M	G06N 5/02	1	Knowledge representation	
M	G06N 5/022	2	{Knowledge engineering; Knowledge acquisition}	
M	G06N 5/025	2	{Extracting rules from data}	
U	G06N 5/04	1	Inference methods or devices	
M	G06N 5/043	2	{Distributed expert systems; Blackboards}	
M	G06N 5/046	2	{Forward inferencing; Production systems}	
M	G06N 5/047	3	{Pattern matching networks; RETE networks}	
U	G06N 7/00	0	Computer systems based on specific mathematical models	
M	G06N 7/02	1	using fuzzy logic (computer systems based on biological models G06N 3/00; computer systems using knowledge-based models G06N 5/00)	
U	G06N 7/08	1	using chaos models or non-linear system models	
N	G06N 10/00	0	Quantum computers, i.e. computer systems based on quantum-mechanical phenomena	
Q	G06N 20/00	0	Machine learning	G06N 20/00, G06N 20/10, G06N 20/20
N	G06N 20/10	1	using kernel methods, e.g. support vector machines [SVM]	
N	G06N 20/20	1	Ensemble learning	
U	G06N 99/00	0	Subject matter not provided for in other groups of this subclass	
D	G06N 99/002	1	{Quantum computers, i.e. information processing by using quantum superposition, coherence, decoherence, entanglement, nonlocality, teleportation}	<administrative transfer to G06N 10/00>
D	G06N 99/005	1	{Learning machines, i.e. computer in which a programme is changed according to experience gained by the machine itself during a complete run (neural networks G06N 3/02; knowledge based models G06N 5/00; fuzzy logic systems G06N 7/02; adaptive control systems G05B 13/00)}	<administrative transfer to G06N 20/00>

*N = new entries where reclassification into entries is involved; C = entries with modified file scope where reclassification of documents from the entries is involved; Q = new entries which are firstly populated with documents via administrative transfers from deleted (D) entries. Afterwards, the transferred documents into the Q entry will either stay or be moved to more appropriate entries, as determined by intellectual reclassification; E= existing entries with enlarged file scope, which receive documents from C or D entries, e.g. when a limiting reference is removed from the entry title; M = entries with no change to the file scope (no reclassification); D = deleted entries; F = frozen entries will be deleted once reclassification of documents from the entries is completed; U = entries that are unchanged.

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NOTES:

- **No { curly brackets } are used for titles in CPC only subclasses, e.g. C12Y, A23Y; 2000 series symbol titles of groups found at the end of schemes (orthogonal codes); or the Y section titles. The { curly brackets } are used for 2000 series symbol titles found interspersed throughout the main trunk schemes (breakdown codes).
- U groups: it is obligatory to display the required “anchor” symbol (U group), i.e. the entry immediately preceding a new group or an array of new groups to be created (in case new groups are not clearly subgroups of C-type groups). Always include the symbol, indent level and title of the U group in the table above.
- All entry types should be included in the scheme changes table above for better understanding of the overall scheme change picture. Symbol, indent level, and title are required for all types .
- “Transferred to” column must be completed for all C, D, F, and Q type entries. F groups will be deleted once reclassification is completed.
- When multiple symbols are included in the “Transferred to” column, avoid using ranges of symbols in order to be as precise as possible.
- For administrative transfer of documents, the following text should be used: “< administrative transfer to XX>”, “<administrative transfer to XX and YY simultaneously>”, or “<administrative transfer to XX, YY, ...and ZZ simultaneously>” when administrative transfer of the same documents is to more than one place.
- Administrative transfer to main trunk groups is assumed to be the source allocation type, unless otherwise indicated.
- Administrative transfer to 2000/Y series groups is assumed to be “additional information”.
- If needed, instructions for allocation type should be indicated within the angle brackets using the abbreviations “ADD” or “INV”: <administrative transfer to XX ADD> , <administrative transfer to XX INV>, or < administrative transfer to XX ADD, YY INV, ... and ZZ ADD simultaneously>.
- In certain situations, the “D” entries of 2000-series or Y-series groups may not require a destination (“Transferred to”) symbol, however it is required to specify “<no transfer>” in the “Transferred to” column for such cases.
- For finalisation projects, the deleted “F” symbols should have <no transfer> in the “Transferred to” column.
- For more details about the types of scheme change, see CPC Guide.

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B. New, Modified or Deleted Warning(s)

SUBCLASS G06N - COMPUTER SYSTEMS BASED ON SPECIFIC COMPUTATIONAL MODELS

<u>Type*</u>	<u>Location</u>	<u>Old Warning</u>	<u>New/Modified Warning</u>
N	G06N 20/00		Group G06N 20/00 is impacted by reclassification into groups G06N 20/10 and G06N 20/20. All groups listed in this Warning should be considered in order to perform a complete search.
N	G06N 20/10		Group G06N 20/10 is incomplete pending reclassification of documents from group G06N 20/00. Groups G06N 20/00 and G06N 20/10 should be considered in order to perform a complete search.
N	G06N 20/20		Groups G06N 20/20 is incomplete pending reclassification of documents from group G06N 20/00. Groups G06N20/00 and G06N20/20 should be considered in order to perform a complete search.

*N = new warning, M = modified warning, D = deleted warning

NOTE: The "Location" column only requires the symbol PRIOR to the location of the warning. No further directions such as "before" or "after" are required.

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2. A. DEFINITIONS (new)

Insert: The following new Definitions.

G06N 10/00

Definition statement

This place covers:

Computation performed by a combination of atomic or subatomic particles where the interactions are no longer described by macroscopic physics but by the theory of quantum mechanics.

References

Informative references

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

Manufacture or treatment of nanostructures	B82B
Nanotechnology for information processing, storage or transmission, e.g. quantum computing or single electron logic	B82Y 10/00
Optical computing devices for processing non-digital data	G06E 3/00
Devices using superconductivity	H01L 39/00
Photonic quantum communication	H04B 10/70

Glossary of terms

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

quantum-mechanical phenomena	covers the quantum phenomena of superposition, coherence, decoherence, entanglement, nonlocality and teleportation
------------------------------	--

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- “quantum computer”, “qubit”, “quantum bit”, “superconducting bits”, “Josephson junction” and “SQUID”

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G06N 20/00

Definition statement

This place covers:

Methods or apparatus giving a machine (in its broadest sense) the ability of adapting or evolving according to experience gained by the machine. A machine in its broadest sense is understood as either an “abstract machine” or a physical one (i.e. a computer).

References

Informative references

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

Adaptive control systems	G05B 13/00
Computer systems using neural networks	G06N 3/02
Computer systems using knowledge based models	G06N 5/00
Computer systems using fuzzy logic	G06N 7/02
Pattern recognition using learning	G06K 9/66
Image processing using neural networks	G06T 1/20
Speech recognition using artificial neural networks	G10L 15/16

G06N 20/20

Definition statement

This place covers:

Machine learning processes where multiple learners (i.e. learning algorithms) are trained to solve the same problem, to obtain better predictive performance than could be obtained from any of the constituent learning algorithms alone.

2. A. DEFINITIONS (modified)

G05B 13/00

Definition statement

This place covers:

Replace: The existing paragraph with the following paragraph.

Adaptive automatic controllers, i.e. where the controller adjusts itself as a result of the system response to its control action, in order to obtain an optimum performance according to some criterion.

References

Limiting references

This place does not cover:

Replace: The existing Limiting references table with the following.

Programme-control systems	G05B 19/00
Machine learning	G06N 20/00

Informative references

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

Replace: The existing Informative references table with the following.

Creation of a mathematical model of the system to be controlled	G05B 17/00
Neural networks	G06N 3/02
Neural networks using fuzzy logics	G06N 3/0436
Expert systems	G06N 5/04
Fuzzy inferencing	G06N 5/048
Fuzzy logics	G06N 7/02

Glossary of terms

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

Replace: The word “sytem” with the correct spelling “system” in the fourth row of the Glossary of terms table.

learning system	an automatic control in which the nature of control parameters and algorithms is modified by the actual experience of the system
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Delete: The entire section **G06F** 15/18.

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G06N 3/00

Insert: The following new Relationships with other classification places section.

Relationships with other classification places

Classification in this group or its subgroups is expected only if the invention concerns the development of a computer. DNA and proteins biomaterials as such, should be classified in the relevant groups of (bio) chemistry.

References

Delete: The entire Limiting references table.

Insert: The following new Informative references table.

Informative references

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

Computer systems using knowledge based models	G06N 5/00
Probabilistic networks	G06N 7/005
Computers systems using fuzzy logic	G06N 7/02
Machine Learning	G06N 20/00
Bioinformatics	G06F 19/10
Analogue computers simulating functional aspects of living beings	G06G 7/60
Memories whose operation depends upon chemical change	G11C 13/02

Delete: The entire Special rules of classification section.

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G06N 3/002

References

Limiting references

This place does not cover:

Replace: The existing Limiting references table with the following table.

Computers using real biological neurons integrated on chips	G06N 3/061
Computers using DNA	G06N 3/123

Insert: The following new Informative references section.

Informative references

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

Computation based on Inorganic chemicals	G06N 99/007
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G06N3/004

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Biological life forms that are created involving biological genetic engineering, e.g. clones	C12N 15/00
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G06N3/006

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Computer games	A63F 13/00
Information retrieval	G06F 16/00
Computer Aided Design [CAD]	G06F 17/50
Collaborative systems - Groupware	G06Q 10/00
Image processing for animations	G06T 13/00
Telecommunications for virtual worlds	H04L 29/06034

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

Replace: The existing text with the following.

- "metaverse", "virtual reality", "virtual world", "virtual society", "social simulations", "particle swarm", "ant colony", "artificial immune systems"

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G06N3/008

Insert: The following new Relationships with other classification places section.

Relationships with other classification places

This group does not cover purely mechanical devices: there should always be some computer involved.

It should act, or at least have as function to look like an animal or a human.

References

Delete: The entire Limiting references section.

Insert: The following new Application-oriented references section.

Application-oriented references

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

Control of industrial robots	G05B 19/00
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Insert: The following new Informative references section.

Informative references

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

Toys or dolls	A63H 3/00 , A63H 11/00
Industrial robots or mechanical grippers	B25J 19/00

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Delete: The entire Special rules of classification section.

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

Replace: The existing text with the following.

- "humanoid", "android", "robot", "robot pet ", "behaviour-based robots"

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G06N 3/02

Insert: The following new Relationships with other classification places section.

Relationships with other classification places

Applications of whatever sort just using neural networks with no description of the neural network itself are to be classified in the relevant application field only.

Documents specifying an architecture and a learning method should be classified in the respective subgroups of [G06N 3/04](#) and [G06N 3/08](#).

References

Delete: The entire Limiting references section.

Insert: The following new Application-oriented references section.

Application-oriented references

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

Adaptive control systems	G05B 13/00
Pattern recognition using neural networks	G06K 9/00
Image processing using neural networks	G06T 1/20
Speech recognition using artificial neural networks	G10L 15/16

Delete: The entire Special rules of classification section.

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G06N 3/0418

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Chaos models per se	G06N 7/08
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G06N 3/0427

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Experts systems; Artificial intelligence per se

G06N 5/04

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G06N 3/0436

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Fuzzy logic per se	G06N 7/02
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G06N 3/0472

References

Delete: The entire Limiting references section.

Informative references

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

Add: The following two new rows to the existing Informative references table.

Chaotic determination of the weights	G06N 3/0418
Neural network in combination with fuzzy logic	G06N 3/0436

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G06N 3/061

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Biomolecular computers

G06N 3/002

G06N 3/063

Definition statement

This place covers:

Delete: The second line of the Definition statement: “Although the title...limited to digital electronics.”

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Neurons implemented using standard electronic digital computers

G06N 3/10

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G06N 3/0635

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Analog electronic computers in general
--

G06G 7/00

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G06N 3/067

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Optical computers in general	G06E 1/00, G06E 3/00
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G06N3/0675

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Hybrid optical computers in general	G06E 3/00
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G06N 3/086

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Genetic algorithms as such	G06N 3/126
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G06N 3/10

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Computer simulations in general

G06F 17/50

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G06N 3/105

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

General graphical user interfaces	G06F 3/048
Program for computer aided design	G06F 17/50

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G06N 3/12

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Genetic algorithms for training neural networks

G06N 3/086

Synonyms and Keywords

Replace: The term “darwinistic” with “Darwinistic”.

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G06N 3/123

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Biological genetic engineering in general	C12N 15/00
Computer memory using DNA	G11C 13/02

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G06N 3/126

Insert: The following new Relationships with other classification places section.

Relationships with other classification places

Classification in this group is not expected when genetic algorithms are used in training neural networks. Applications of whatever sort just using genetic algorithms with no description of the genetic algorithm itself are to be classified in the relevant application field only.

References

Delete: The entire Limiting references section.

Insert: The following new Application-oriented references section.

Application-oriented references

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

Genetic algorithms used in training of neural networks	G06N 3/086
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Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

Replace: The existing text with the following.

- "evolutionary programming", "Darwinistic programming", "genetic programming", "evolution strategies", "differential evolution", "estimation of distribution algorithm", "gene expression programming", "memetic algorithm", "co-evolution", "learning classifier systems", "cellular genetic algorithm", "parallel, distributed, fine-grained or coarse-grained genetic algorithm"

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G06N 5/00

Definition statement

This place covers:

Replace: The existing text with the following.

Computer systems using knowledge bases or creating knowledge bases.

In particular, specific subjects are classified in the subgroups as it follows:

- Knowledge representation is classified in group [G06N 5/02](#);
- Use of knowledge bases for reasoning is classified in group [G06N 5/04](#).

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Information retrieval; Database structures therefor; File system structures therefor	G06F 16/00
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Delete: The entire Special rules of classification section.

Insert: The following new Glossary of terms section.

Glossary of terms

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

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knowledge base	set of representations of facts about the system to be controlled and its environment
knowledge-based agent	a software module that uses a knowledge base to implement control decisions

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

Replace: The existing text with the following.

- "knowledge base", "knowledge model", "knowledge graph", "semantic network", and "reasoning model"

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G06N 5/003**References****Application-oriented references**

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

Replace: The existing table with the following.

Use of these techniques in computer games	A63F 13/00
Use of these techniques for solving equations	G06F 17/10
Forecasting or optimisation specifically adapted for administration or management	G06Q 10/04
ICT specially adapted for medical diagnosis, medical simulation or medical data mining; ICT specially adapted for detecting, monitoring or modelling epidemics or pandemics	G16H 50/00

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

Replace: The existing text with the following.

- "dynamic search", "adaptive search", "branch and bound", "constraint solver", "constraint optimization", "empirical optimization", and "decision trees"

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G06N 5/006

References

Delete: The entire Limiting references section.

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

Insert: One space before “formula checker” in the existing text.

- "logical consistency", "verification", "automatic proving", "determination of provability", "formula checker" and "formula converter"

G06N 5/02

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

indexing in information and retrieval

G06F 16/00

Delete: The entire Special rules of classification section.

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

Replace: The existing text with the following.

- "formalisation of a problem", "formalism for knowledge representation", "expressivity", "semantics of a formalism", "elicitation of knowledge action", "rules, ontologies, frames, logics", "description logic", "semantic web", "declarative", "formula converter", "knowledge graph", and "semantic network"

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G06N 5/04

Definition statement

This place covers:

Replace: The word “inference” with “Inference”.

Insert: A period following “systems”.

Symbolic inference methods and devices.
Programs with symbolic reasoning capabilities using knowledge.
Inference systems.

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Adaptive control	G05B 13/00
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Delete: The entire Special rules of classification section.

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

Replace: The existing text with the following.

- "inference", "reasoning", "expert system", "instantiation, explanation, recommendation", "aid to diagnosis", "pattern matching", "case-based reasoning", "deduction", "analogy", "abnormal condition detection", "problem solving, planning" and “question answering”

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G06N 5/042

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Automatic theorem proving	G06N 5/006
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G06N 5/045

References

Delete: The entire Limiting references section.

G06N 5/048

Definition statement

This place covers:

Replace: The existing text with the following.

Transformation of exact inputs in fuzzy inputs with membership functions. The fuzzified inputs are processed in a fuzzy inference machine with fuzzy if-then rules. Depending on the degree of membership, several rules are fired in parallel. The consequents of each rule are aggregated into fuzzy outputs which are de-fuzzified or not de-fuzzified.

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Tuning of fuzzy parameters

G06N 7/02

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G06N 7/00

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Neural networks	G06N 3/00
Complex mathematical operations	G06F 17/10

Special rules of classification

Replace: The symbol “G06N 99/005” with “G06N 20/00”.

When other types of Machine Learning are involved, also classify in [G06N 20/00](#).

G06N 7/005

Insert: The following new Relationships with other classification places section.

Relationships with other classification places

Classification in this group is not expected when probabilistic networks are used in neural networks (e.g. Boltzmann machines).

Applications of whatever sort just using Bayesian or Markov models with no description of the Bayesian or Markov model itself are to be classified in the relevant application field.

Learning of unknown parameters of the network to be classified also in G06N 20/00

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References

Application-oriented references

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

Delete: The text “When the Bayesian network...in its field of application”.

Replace: The existing table with the following.

Game playing	A63F 13/00
Documents classification and information retrieval	G06F 16/00
Bioinformatics	G06F 19/00
Pattern recognition	G06K 9/00
Speech recognition	G10L 15/00

Insert: The following new Informative references section.

Informative references

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

Feedback neural networks, e.g. Boltzmann machines	G06N 3/0445
Neural networks having a probabilistic aspect	G06N 3/0472

Delete: The entire Special rules of classification section.

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

Replace: The existing text with the following.

- "Bayesian network", "Bayes network", "belief network", "directed acyclic graphical model", "beliefs propagation", "random variables", "conditional dependencies", "probability function", "probability nodes", "generalized Bayesian networks", "influence diagrams", "probability density function", "Bayes theorem", "Markov model", "Markov chain", "Markov network", "Markov random field", "Markov decision process", "probabilistic graphical model", "conditional random fields", and "Monte Carlo"

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G06N 7/02

Insert: The following new Relationships with other classification places section.

Relationships with other classification places

Classification in this group is not expected when fuzzy logics is used in combination with neural networks, nor when fuzzy logic is used in fuzzy inferencing.

Applications of whatever sort just using fuzzy logic with no description of the fuzzy logic itself are to be classified in the relevant application field.

References

Limiting references

This place does not cover:

Replace: The existing table with the following.

Computer systems based on biological models	G06N 3/00
Computer systems using knowledge based models	G06N 5/00

Insert: The following new Application-oriented references section.

Application-oriented references

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

Adaptive control systems	G05B 13/00
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Delete: The entire Special rules of classification section.

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G06N 7/04

References

Delete: The entire Limiting references section.

G06N 7/08

Insert: The following new Relationships with other classification places section.

Relationships with other classification places

Classification in this group is not expected when chaos models or non-linear models are used in neural networks.

References

Delete: The entire Limiting references section.

Insert: The following new Informative references section.

Informative references

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

Neural networks using chaos or fractal principles

G06N 3/0418

Delete: The entire Special rules of classification section.

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G06N 99/00

Definition statement

This place covers:

Replace: The existing text with the following.

This group is residual to the whole of the subclass, i.e. it covers subject matter which falls under the scope of [G06N](#) and which is not covered by its groups.

Therefore this main group should be rarely used or not used for classification.

Whenever a new computing technology is identified, which is not covered by the other main groups of G06N, it is recommended to create a new subgroup here for that new subject.

Delete: The entire Limiting references section.

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G06N 99/002Delete: The entire Definition G06N 99/002.**G06N 99/005**Delete: The entire Definition G06N 99/005.**G06N 99/007**Insert: The following new Relationships with other classification places section.**Relationships with other classification places**

Classification in this group is not expected when computational elements implement quantum computers.

References***Limiting references****This place does not cover:*Delete: The following second row of the Limiting references table.

Computing using atoms or subatomic particles	G06N 99/002
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Insert: The following new Informative references section.**Informative references***Attention is drawn to the following places, which may be of interest for search:*

Quantum computers	G06N 10/00
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3. REVISION CONCORDANCE LIST (RCL)

<u>Type*</u>	<u>From CPC Symbol (existing)</u>	<u>To CPC Symbol(s)</u>
D	G06F 15/18	<administrative transfer to G06N 20/00>
Q	G06N 20/00	G06N 20/00, G06N 20/10, G06N 20/20
D	G06N 99/002	<administrative transfer to G06N 10/00>
D	G06N 99/005	<administrative transfer to G06N 20/00>

* C = entries with modified file scope where reclassification of documents from the entries is involved; Q = new entries which are firstly populated with documents via administrative transfers from deleted (D) entries. Afterwards, the transferred documents into the Q entry will either stay or be moved to more appropriate entries, as determined by intellectual reclassification; D = deleted entries; F = frozen entries will be deleted once reclassification of documents from the entries is completed.

NOTES:

- Only C, D, F, and Q type entries are included in the table above.
- When multiple symbols are included in the “To” column, do not use ranges of symbols.
- For administrative transfer of documents, the following text should be used: “< administrative transfer to XX>”, “<administrative transfer to XX and YY simultaneously>”, or “<administrative transfer to XX, YY, ...and ZZ simultaneously>” when administrative transfer of the same documents is to more than one place.
- Administrative transfer to main trunk groups is assumed to be the source allocation type, unless otherwise indicated.
- Administrative transfer to 2000/Y series groups is assumed to be “additional information”.
- If needed, instructions for allocation type should be indicated within the angle brackets using the abbreviations “ADD” or “INV”: <administrative transfer to XX ADD>, <administrative transfer to XX INV>, or < administrative transfer to XX ADD, YY INV, ... and ZZ ADD simultaneously>.
- In certain situations, the “D” entries of 2000-series or Y-series groups may not require a destination (“To”) symbol, however it is required to specify “<no transfer>” in the “To” column for such cases.
- RCL is not needed for finalisation projects.

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

<u>CPC</u>	<u>IPC</u>	<u>Action*</u>
G06F 15/18		DELETE
G06N 10/00	G06N 10/00	NEW
G06N 20/00	G06N 20/00	NEW
G06N 20/10	G06N 20/10	NEW
G06N 20/20	G06N 20/20	NEW
G06N 99/002		DELETE
G06N 99/005		DELETE

*Action column:

- For an (N) or (Q) entry, provide an IPC symbol and complete the Action column with "NEW."
- For an existing CPC main trunk entry or indexing entry where the existing IPC symbol needs to be changed, provide an updated IPC symbol and complete the Action column with "UPDATED."
- For a (D) CPC entry or indexing entry complete the Action column with "DELETE." IPC symbol does not need to be included in the IPC column.
- For an (N) 2000 series CPC entry which is positioned within the main trunk scheme (breakdown code) provide an IPC symbol and complete the action column with "NEW".
- For an (N) 2000 series CPC entry positioned at the end of the CPC scheme (orthogonal code), with no IPC equivalent, complete the IPC column with "CPCONLY" and complete the action column with "NEW".

NOTES:

- F symbols are not included in the CICL table above.
- E and M symbols are not included in the CICL table above unless a change to the existing IPC is desired.

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5. CROSS-REFERENCE LIST (CRL)

Scheme references impacted by this revision project

<u>Location of reference to be changed</u>	<u>Referenced subclass or group to be changed</u>	<u>Action; New reference symbol; New text</u>
G06K9/62	G06F15/18	Machine learning G06N 20/00

Definitions references impacted by this revision project

<u>Location of reference to be changed</u>	<u>Referenced subclass or group to be changed</u>	<u>Section of definition</u>	<u>Action; New reference symbol; New text</u>
G06E1/00	G06N99/002	Limiting references	<i>Move to section Informative references and amend</i> Quantum computers G06N 10/00
G06E3/00	G06N99/002	Limiting references	<i>Move to section Informative references and amend</i> Quantum computers G06N 10/00
G06J	G06N99/002	Limiting references	<i>Move to section Informative references and amend</i> Quantum computers G06N 10/00
G06J3/00	G06N99/002	Limiting references	<i>Move to section Informative references and amend</i> Quantum computers G06N 10/00
G06Q10/06395	G06F15/18	Informative references	Machine learning G06N 20/00
G06Q10/067	G06F15/18	Informative references	Machine learning G06N 20/00
G08G1/0104	G06F15/18	Informative references	Machine learning G06N 20/00
H01L27/18	G06N99/002	Informative references	Quantum computers G06N 10/00
H01L39/00	G06N99/002	Informative references	Quantum computers G06N 10/00

NOTES:

- The CRL tables above are used for changes to locations **outside** of the project scope. Changes to references in scheme titles or definitions **inside** the project scope will be reflected in the “scheme change” template or one of the “definition” templates.

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- In addition to other changes proposed in the tables above, in the column titled “Referenced subclass or group to be changed,” **referenced** D symbols should indicate an action of “delete” or should indicate a replacement symbol and **referenced** F symbols should indicate a replacement symbol.
- When a reference is deleted, text related to that reference will also be deleted unless other references or a range of references associated with the same text remain.