

CPC**COOPERATIVE PATENT CLASSIFICATION****G06N****COMPUTER SYSTEMS BASED ON SPECIFIC COMPUTATIONAL MODELS****G06N 3/00**

Computer systems based on biological models (analogue computers simulating functional aspects of living beings [G06G 7/60](#))

G06N 3/002

- . { Biomolecular computers, i.e. using biomolecules, proteins, cells (using DNA [G06N 3/123](#); using neurons [G06N 3/061](#)) }

G06N 3/004

- . { Artificial life, i.e. computers simulating life }

G06N 3/006

- .. { based on simulated virtual individual or collective life forms , e.g. single "avatar", social simulations, virtual worlds (computer games [A63F 13/00](#); medical simulations [G06F 19/00](#); information retrieval [G06F 17/30873](#); image processing [G06T](#); telecommunication protocols [H04L 29/06034](#)) }

G06N 3/008

- .. { 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 (toys or dolls [A63H 3/00](#); industrial robot control [G05B 19/00](#), [B25J 9/00](#); artificial neural networks [G06N 3/00](#); rule based artificial intelligence [G06N 5/00](#)) }

G06N 3/02

- . using neural network models (for adaptive control [G05B 13/00](#); for image pattern matching [G06K 9/00](#); for image data processing [G06T 1/20](#); for phonetic pattern matching [G10L 15/16](#))

G06N 3/04

- .. Architectures, e.g. interconnection topology

G06N 3/0409

- ... { Adaptive Resonance Theory [ART] networks }

G06N 3/0418

- ... { using chaos or fractal principles }

G06N 3/0427

- ... { in combination with an expert system }

G06N 3/0436

- ... { in combination with fuzzy logic }

G06N 3/0445

- ... { Feedback networks, e.g. hopfield nets, associative networks }

G06N 3/0454

- ... { using a combination of multiple neural nets }

G06N 3/0463

- ... { Neocognitrons }

G06N 3/0472

- ... { using probabilistic elements, e.g. p-rams, stochastic processors }

G06N 3/0481

- ... { Non-linear activation functions, e.g. sigmoids, thresholds }

G06N 3/049

- ... { Temporal neural nets, e.g. delay elements, oscillating neurons, pulsed inputs }

G06N 3/06

- .. Physical realisation, i.e. hardware implementation of neural networks, neurons or parts of neurons

G06N 3/061

- ... { using biological neurons, e.g. biological neurons connected to an integrated circuit }

G06N 3/063

- ... using electronic means

G06N 3/0635

- { using analogue means }

G06N 3/067

- ... using optical means

G06N 3/0675

- { using electro-optical, acousto-optical or opto-electronic means }

G06N 3/08

- .. Learning methods

G06N 3/082

- ... { modifying the architecture, e.g. adding or deleting nodes or connections, pruning }

- G06N 3/084 . . . { Back-propagation }
- G06N 3/086 . . . { using evolutionary programming, e.g. genetic algorithms }
- G06N 3/088 . . . { Non-supervised learning, e.g. competitive learning }
- G06N 3/10 . . . Simulation on general purpose computers
- G06N 3/105 . . . { Shells for specifying net layout }

- G06N 3/12 . . . using genetic models
- G06N 3/123 . . . { DNA computers, i.e. information processing using biological DNA }
- G06N 3/126 . . . { Genetic algorithms, i.e. information processing using digital simulations of the genetic system }

G06N 5/00**Computer systems utilising knowledge based models**

- G06N 5/003 . { Dynamic search techniques, heuristics, branch-and-bound ([G06F 9/44L3B](#), [G06N 5/046](#) take precedence; for optimisation [G06Q 10/00B](#); for game playing [G06F 19/00B](#)) }
- G06N 5/006 . . { Automatic theorem proving }

- G06N 5/02 . Knowledge representation ({ [G06N 5/04](#) takes precedence })
- G06N 5/022 . . { Knowledge engineering, knowledge acquisition }
- G06N 5/025 . . . { Extracting rules from data (learning in general [G06F 15/18](#)) }
- G06N 5/027 . . { Frames }

- G06N 5/04 . Inference methods or devices
- G06N 5/041 . . { Abduction }
- G06N 5/042 . . { Backward inferencing }
- G06N 5/043 . . { Distributed expert systems, blackboards }
- G06N 5/045 . . { Explanation of inference steps }
- G06N 5/046 . . { Forward inferencing, production systems }
- G06N 5/047 . . . { Pattern matching networks, RETE }
- G06N 5/048 . . { Fuzzy inferencing }

G06N 7/00**Computer systems based on specific mathematical models**

- G06N 7/005 . { Probabilistic networks }

- G06N 7/02 . using fuzzy logic ([G06N 3/00](#), [G06N 5/00](#) take precedence; for adaptive control [G05B 13/00](#))
- G06N 7/023 . . { Learning or tuning the parameters of a fuzzy system }
- G06N 7/026 . . { Development tools for entering the parameters of a fuzzy system }
- G06N 7/04 . . Physical realisation
- G06N 7/043 . . . { Analogue or partially analogue implementation }
- G06N 7/046 . . . { Implementation by means of a neural network (neural networks using fuzzy logic [G06N 3/0436](#)) }
- G06N 7/06 . . Simulation on general purpose computers

G06N 7/08 . using chaos models or non-linear system models

G06N 99/00 Subject matter not provided for in other groups of this subclass

G06N 99/002 . { Quantum computers, i.e. information processing by using quantum superposition, coherence, decoherence, entanglement, nonlocality, teleportation }

G06N 99/005 . { 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](#)) }

G06N 99/007 . { Molecular computers, i.e. using inorganic molecules (using biomolecules [G06N 3/002](#)) }