Mathematical Methods and Artificial Intelligence

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EL HARRAK Hanane
+33156658154
helharrak@inpi.fr

INSTITUT NATIONAL
DE LA PROPRIÉTÉ
INDUSTRIELLE

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INTRODUCTION

Article L611-10 paragraph 1 of the French Intellectual Property Code

"Patentable inventions are inventions in all fields of technology, which are new, involve an inventive step and are capable of industrial application."

INTRODUCTION

Article L611-10 paragraphs 2 and 3 of the French Intellectual Property Code

"The following are not considered to be inventions in the meaning of paragraph 1 of this article:

a) Discoveries and scientific theories and ***mathematical methods****;*
b) Aesthetic creations;
c) Schemes, rules and methods for performing mental acts, playing games or doing business, and ***programs for computers****;*
d) Presentations of information."

"3. *The provisions of paragraph 2 of this article only exclude the patentability of the subject-matter or activities referred to in the above provisions to the extent that a patent application or patent relates to such subject-matter or activities* ***as such****. Discoveries and scientific theories and mathematical methods."*

INTRODUCTION

✓ A computer-implemented invention (CII)

An invention that involves the use of:

- A computer
- A computer network
- Or other programmable hardware.

Having one or more features that are realised wholly or partly by means of a computer program.

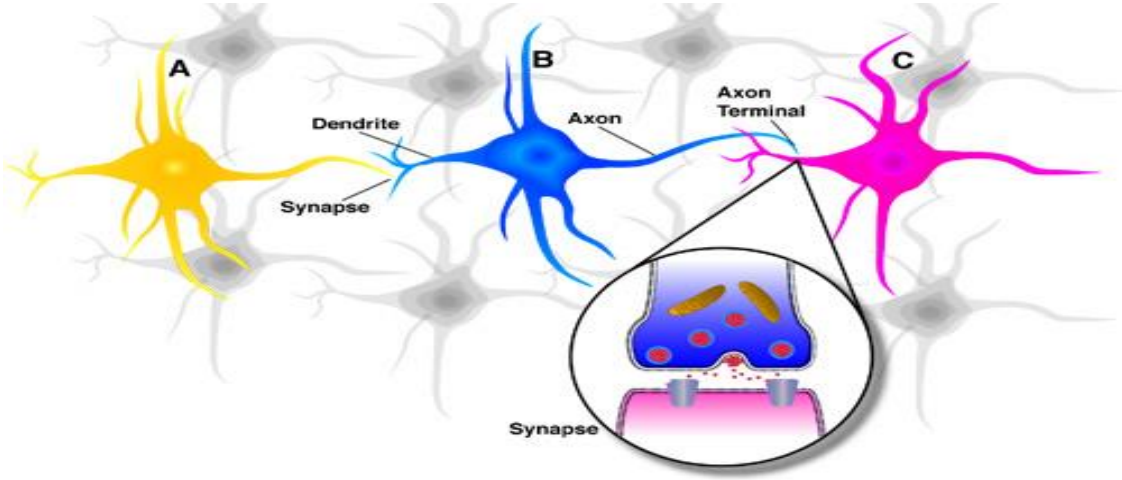
✓ Special cases of CII

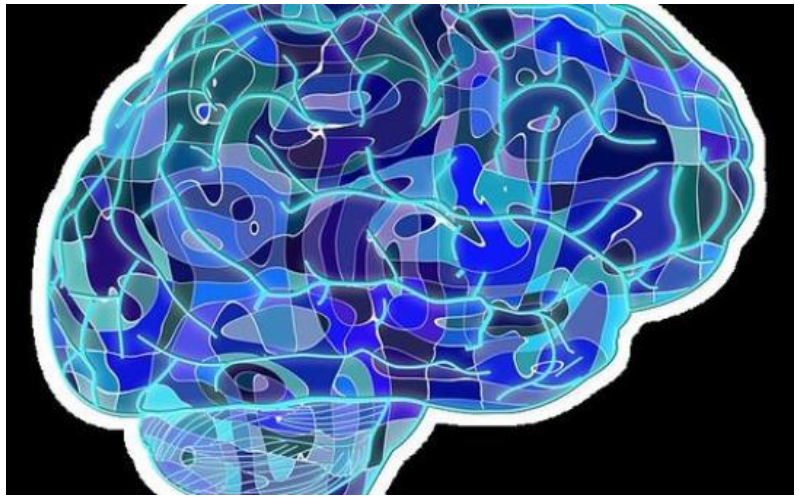
- Mathematical Methods, Simulation, Computer-Assisted Design and Modelling,
- Artificial Intelligence

✓ Updating of INPI examination guidelines in this respect in October 2019

Artificial intelligence - Definition

- Definition
  - ✓ Artificial intelligence is a set of theories and techniques used to produce computer programs, computational models and algorithms to enable machines to reproduce a form of intelligence.
  - ✓ In recent years, artificial intelligence has almost always been associated with learning capabilities such as machine learning, which uses statistical methods to enable computers to learn from data.





Artificial Intelligence - INPI Examination Guidelines

Section C- Chapter VII- Paragraph 1.3.2

➢ **Mathematical method as such**

✓ Because it is based on computational models, artificial intelligence is considered by definition to be a **computer-implemented mathematical method.**

✓ The use of expressions such as: “support vector machine (SVM)”, “genetic algorithm”, “artificial neural network (ANN)” or “automatic/deep learning” **is not sufficient in itself to confer a technical character** to the claimed subject matter.

Artificial Intelligence - INPI Examination Guidelines

✓ Example 1

➢ **Word processing,** such as the use of a tool to extract business-related keywords from content in order to enable their identification and indexing by means of artificial intelligence was found to be non-technical.

✓ Example 2

Predictive analysis, such as a process using artificial intelligence to predict stock market prices, has been deemed to be non-technical.

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➢ Technical character

✓ A contribution can be made to the technical character of an invention by providing a **technical solution to a technical problem** by **non-generic technical means** or by **processing measured technical data**.

✓ Example 1

Computer vision, for the processing, recognition and/or classification of images and/or videos:

o recognition of the environment of an autonomous vehicle based on data obtained from sensors;

o the use of artificial intelligence to analyse digital images in order to recognise an incident such as a tumour in a series of images.

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✓ Example 2

Speech recognition and/or man-machine dialogue: the use of artificial intelligence to analyse human language by a dedicated robot, with speech data acquired via audio sensors and converted into language data via speech-recognition software in order to determine and vary the robot's behaviour in terms of gestural and vocal output.

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✓ Example 3

Robotics and/or **monitoring/control processes**

o real-time control of a drilling tool, based on physical properties measured in the drilling environment by training a neural network;

o classification of IP (Internet Protocol) traffic between nodes using machine learning to improve the traffic management on the IP network.

✓ Example 4

Predictive analysis: the use of a neural network in a heart monitoring apparatus to detect an irregular heartbeat is considered to be a technical contribution.

CONCLUSION

- For some patent applications, the presence of a feature (e.g. a process step) deemed to be technical in the main claim can be sufficient to confer a technical character.

- Whatever their nature and underlying technical field, patent applications must be considered on an individual basis in order to evaluate the technical character of each of them independently and objectively.

CONCLUSION

« PACTE » Law :

- Creating a new opposition procedure for patents applicable up to avril 2020

- Examination of the inventive step criterion → applicable for applications up to May 22, 2020

- Assessment of inventive step for inventions related to AI with a mix of technical and non-technical features

Thank you for your attention

Hanane El Harrak
helharrak@inpi.fr