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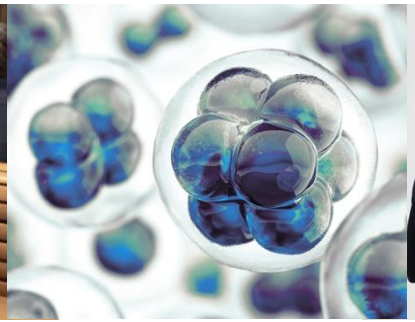
Patenting artificial intelligence at the EPO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Outline

- What is artificial intelligence (AI)
- Patentability of AI
- Use of AI to create inventions
  – “DABUS” application
- Promoting understanding of AI

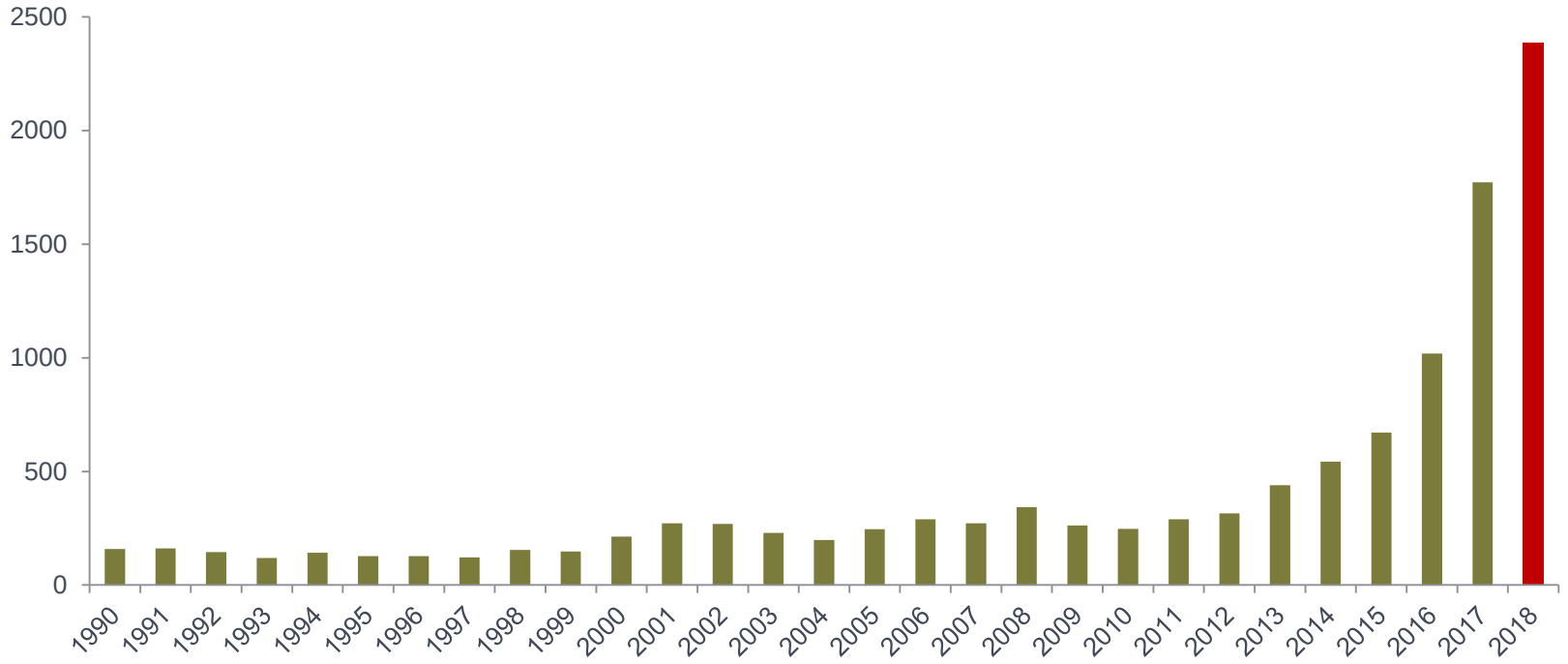
What is Artificial Intelligence – Machine Learning?

- AI encompasses computational systems with capabilities and/or behaviour commonly perceived as "intelligent" by humans such as learning, evolving, reasoning, inferring, making decisions

- An example is machine learning (ML), which gives a machine the ability to adapt according to experience gained by the machine itself

- Inventions related to AI and ML fall under the definition of computer implemented inventions (CII)
  - They are patentable if the general patentability criteria are met

Patent applications on AI at the EPO



Source: EPO. The number of European patent applications in AI technologies corresponds to EP/WO families in the CPC class G06N7, G06N5, G06N99 /005 and G06N3, corresponding to core AI. In addition, a set of class symbols related to AI was compiled also, based on the description of the classification symbol. The results are presented by oldest filing date.

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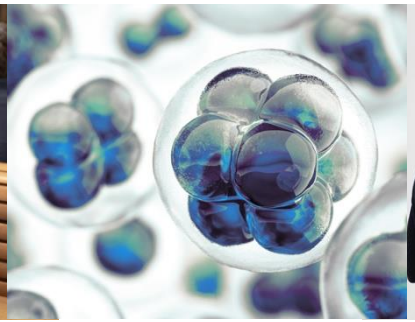
Patentability of AI


Patentability requirements

Art. 52 (1) EPC

- Inventions in all fields of technology
- New
- Inventive

Art. 52 (2) and (3) EPC

- Mathematical methods, schemes, rules and methods for performing mental acts etc. and programs for computer are not regarded as inventions
- if claimed as such in the application

Art. 54, 56 EPC

- All features contributing to the technical character are taken into account for assessment of inventive step of an invention in the field of CII, AI and ML

Patentability of CII, AI and ML

G-II, 3.3.1 Artificial Intelligence and Machine Learning

AI/ML algorithms are of abstract mathematical nature

- Their basic purpose (classification, clustering, etc.) is abstract. The fact they are “trained” does not change this
- Terms like “Support Vector machine” or “Neural Network” generally refer to abstract models devoid of technical character (cf. excluded from patentability if claimed as such)

- Claim requires (explicitly or implicitly) technical means
  - Any technical means e.g. “computer-implemented” is enough

Disclosure of the invention – Art. 83 EPC

- An application shall disclose the invention in a manner sufficiently clear and complete for it to be carried out by a skilled person

  - The description must disclose any feature essential for carrying out the invention in sufficient detail to render it apparent to the skilled person how to put the invention into practice (T 2574/16)

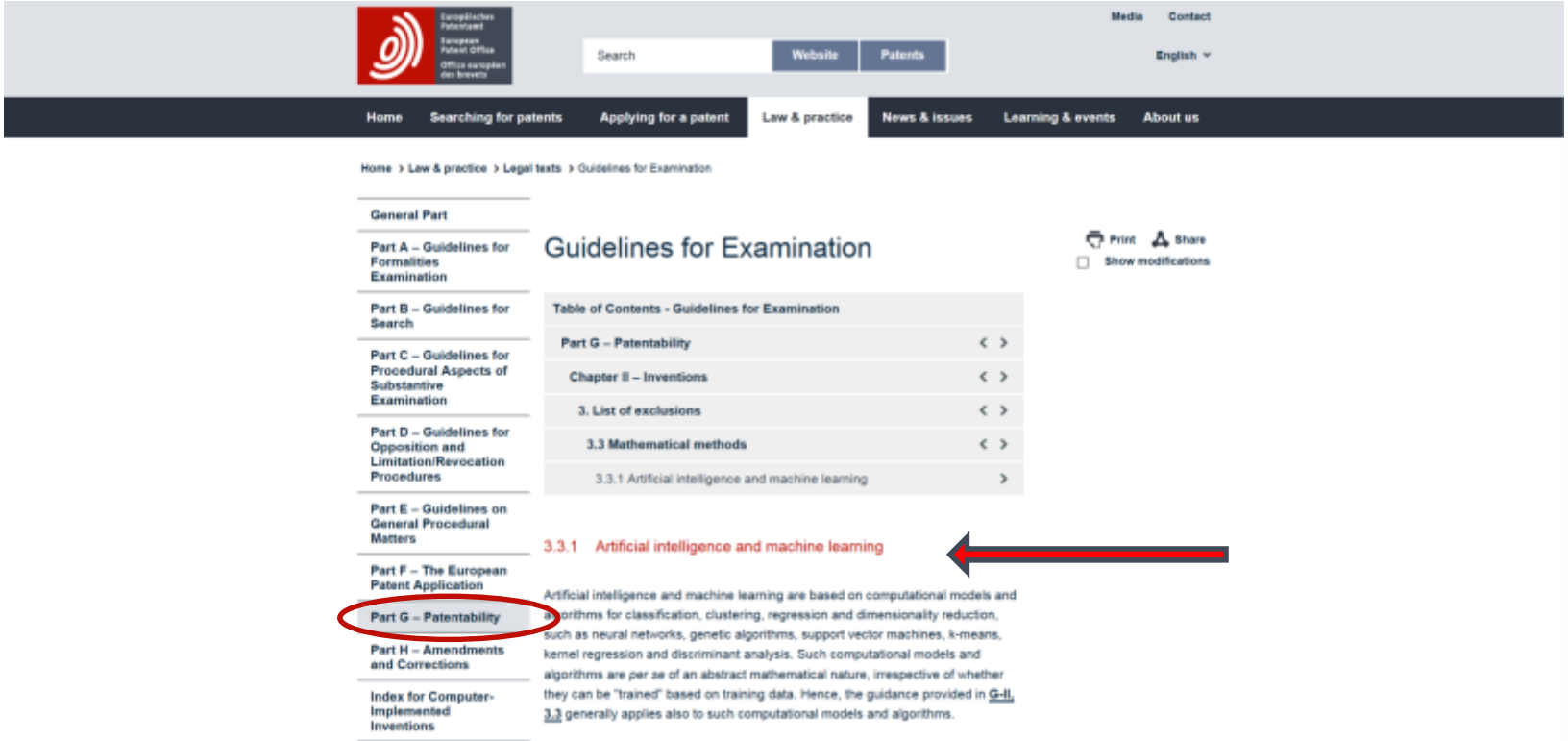
  - Depending on the claimed AI-related invention this could require disclosure of underlying algorithms and/or corresponding training steps (T 161/18)

The person skilled in the art

- Has means and capacity for routine work and experimentation
  - e.g. setting parameters, choosing training and validation sets

- Evaluation of complex mixed-type inventions may require expertise in multiple fields
  - Can be a team
    - e.g. in applied AI fields, a machine learning specialist and an aerospace engineer

EPO Guidelines on patenting AI



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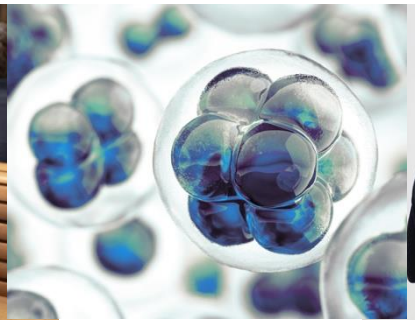
Use of AI to create inventions


Categories of “AI inventions”

- Human-made inventions using AI for the verification of the outcome
- Inventions in which a human identifies a problem and uses AI to find a solution
- AI-made inventions, in which AI identifies a problem and proposes a solution without human intervention

Common understanding of inventorship

- An academic study on AI inventorship commissioned by the EPO
  - Analysis of the impact of AI technology on the concept of inventorship

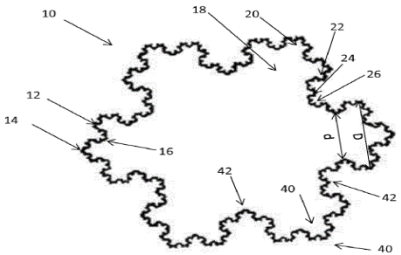
- Discussions with the EPC contracting states show that the patent system is well equipped to deal with the technical developments in the field of AI
  - The inventor is the person who created the invention by their own creative activity

“DABUS applications”

18 275 163.6

FOOD CONTAINER

A container (10) for use, for example, for beverages, has a wall (12) with and external surface (14) and an internal wall (16) of substantially uniform thickness. The wall (12) has a fractal profile which provides a series of fractal elements (18-28) on the interior and exterior surfaces (14-16), forming pits (40) and bulges (42) in the profile of the wall and in which a pit (40) as seen from one of the exterior or interior surfaces (12, 14) forms a bulge (42) on the other of the exterior or interior surfaces (12, 14). The profile enables multiple containers to be coupled together by inter-engagement of pits and bulges on corresponding ones of the containers. The profile also improves grip, as well as heat transfer into and out of the container.



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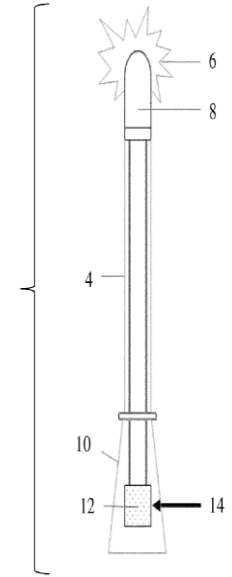
DEVICES AND METHODS FOR ATTRACTING ENHANCED ATTENTION

The present invention discloses devices and methods for attracting enhanced attention. Devices include: an input signal of a lacunar pulse train having characteristics of a pulse frequency of approximately four Hertz and a pulse-train fractal dimension of approximately one-half; and at least one controllable light source configured to be pulsatingly operated by the input signal; wherein a neural flame emitted from at least one controllable light source as a result of the lacunar pulse train is adapted to serve as a uniquely-identifiable signal beacon over potentially-competing attention sources by selectively triggering human or artificial anomaly-detection filters, thereby attracting enhanced attention.



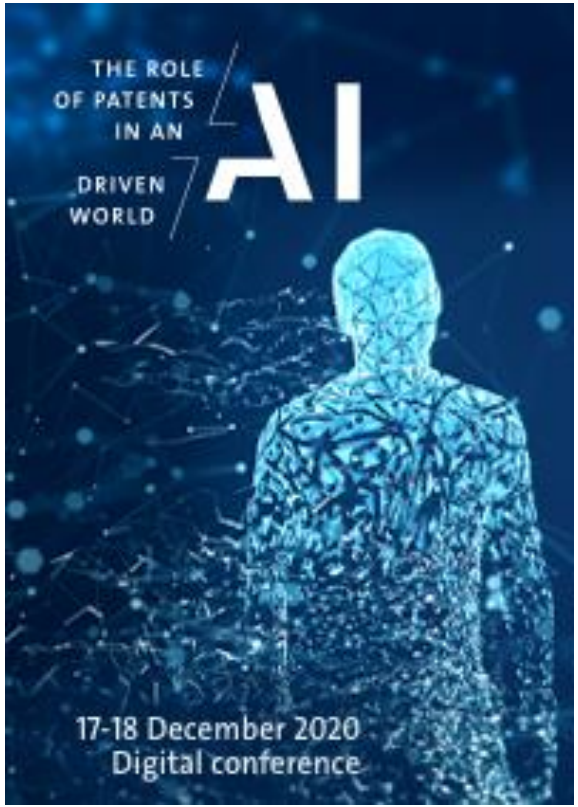
Refusal of the “DABUS applications”

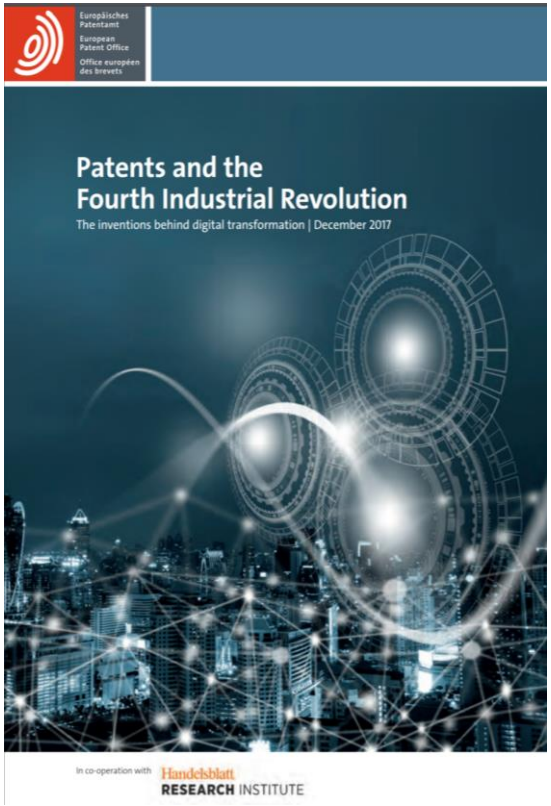
- The EPO refused applications designating an AI system as inventor
  - The term “inventor” refers to a natural person only
  - The owner of an AI system cannot be a successor in title because AI systems have no legal personality
  - Designation of inventor is a formal requirement of an application, independent from the substantive patentability requirements

- Appeals are pending with the Legal Board of Appeal (J 8/20, J 9/20)

- UKIPO, UK High Court and USPTO: inventor must be a human being

Promoting understanding of AI





Thank you very much for your attention!