Growing AI-related patent applications filed in Japan

IPC: G06F 15/18, G06N

source: JPO
AI-related applications in Japan divided into technical fields

- Image processing
- Data mining
- Speech processing
- Natural language processing

source: JPO
AI-related applications filed in IP5 offices

source: JPO using patentscope
Neural Network related applications filed in IP5 offices

source: JPO using patentscope
Inventorship

• An inventive entity must be a natural person (Article 29(1)).
• Can Person X be an inventor of the invention when X used AI to complete the invention?
  • Similar to “joint invention” (Tokyo District Court decision)
    • If X *substantially* contributes to the invention, X can be an inventor.
    • If X conceived of the means for solving the problem, X is highly likely to be considered to be an inventor.
    • But if X only took administrative actions, X is not considered to be an inventor.
  • “*substantial contribution*” but how much? X may be considered as an inventor if X presented to AI a problem that relates to a feature of the invention so that AI can solve the problem.
  • Conversely, X may not be considered an inventor if X presented to AI a merely general or vague problem or X presented a problem irrelevant to the feature of the completed invention.
Patent eligibility

• Invention by using AI (“AI Invention”)
  • Examined as computer software or data structure.
  • Determination as to whether AI invention amount to “a creation of a technical idea utilizing the laws of nature" depending on whether or not "information processing by the software is concretely realized by using hardware resources“.
  • The issue is how to claim the AI invention properly to be eligible.

• AI-created invention (“Inventive AI”)
  • The current Patent Act presumes that a patentable invention is created by a natural person.
  • Whether an technical idea AI itself invented without any human intervention is patent eligible or not – it is still an open question.
  • But “Inventive AI” may not be distinguishable from “AI Invention” during examination.
Adequacy of disclosure

- Enablement requirement: Specification must clearly and sufficiently disclose the particular means of achieving the invention so that a person having ordinary skill in the art (PHOSTA) can carry out the invention based on the disclosure.
  - Note: PHOSTA in examining adequacy of disclosure may be different from PHOSTA in examining inventive step (described later).
- There are no clear standards as to how specific the disclosure of AI elements such as a neural network or “black box” algorithm must be in order to comply with the JPO Examination guidelines.
What is advisable to disclose to fulfill enablement requirement

• If AI invention is directed to a specific neural network structure, disclose particular structure (cascade, parallel hybrid, etc.) and algorithms.

• If AI invention is directed to a learning method, disclose a set of input data and training data, details of learning process and the nature of output data.

• If AI invention is directed to a trained model, disclose a set of trained parameters of the pre-trained network.

• If AI invention is directed to an application to a specific technical field, disclose the field specific input and output data as well as the field specific process.
Assessment of inventive step for Invention by using AI (“AI invention”)

- JPO has recently provided case examples on how to apply the current Examination Guidelines and the rules set forth in the Examination Handbook to AI inventions.

- JPO indicates that *mere replacement* of the prior art by a neural network model does not have inventive step.

- Need evidence of *better results* that cannot be obtained by prior art.

Source: Speech by JPO Director-General, Patent Examination Department at FICPI Japan Osaka Symposium 2018
Assessment of inventive step for AI-created Invention (“Inventive AI”)  

• What is ordinary creativity?  
  • Deep level and wide scope of prior art (e.g. AlphaGo)  

• Who is a person having ordinary skill in the art (PHOSTA)?  
  • An “AI” having ordinary skill in the art (“AIHOSTA”) would make nonsense of “could-would” approach, “teach away” or “hindsight”?  

• A “hypothetical” person having ordinary skill in both a specific technical field and AI technology?  
  • JPO once introduced a hypothetical person having expertise in both “finance” and “computer” in examining inventive step for a “business model” patent.  

• AI having “ordinary” skill could render all AI-created inventions obvious?  
  • An AI creates inventions, while another AI makes them obvious.
THANK YOU

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