AI and Patenting in Japan

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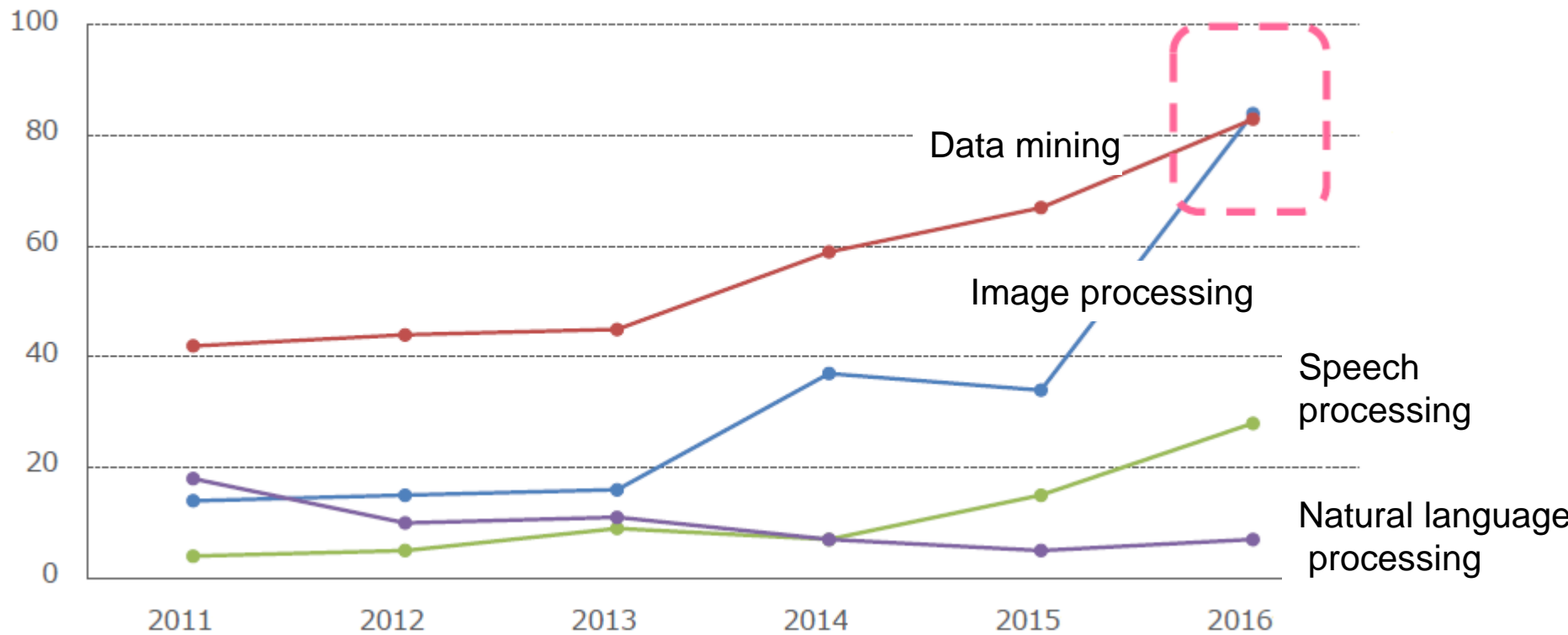
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Growing AI-related patent applications filed in Japan
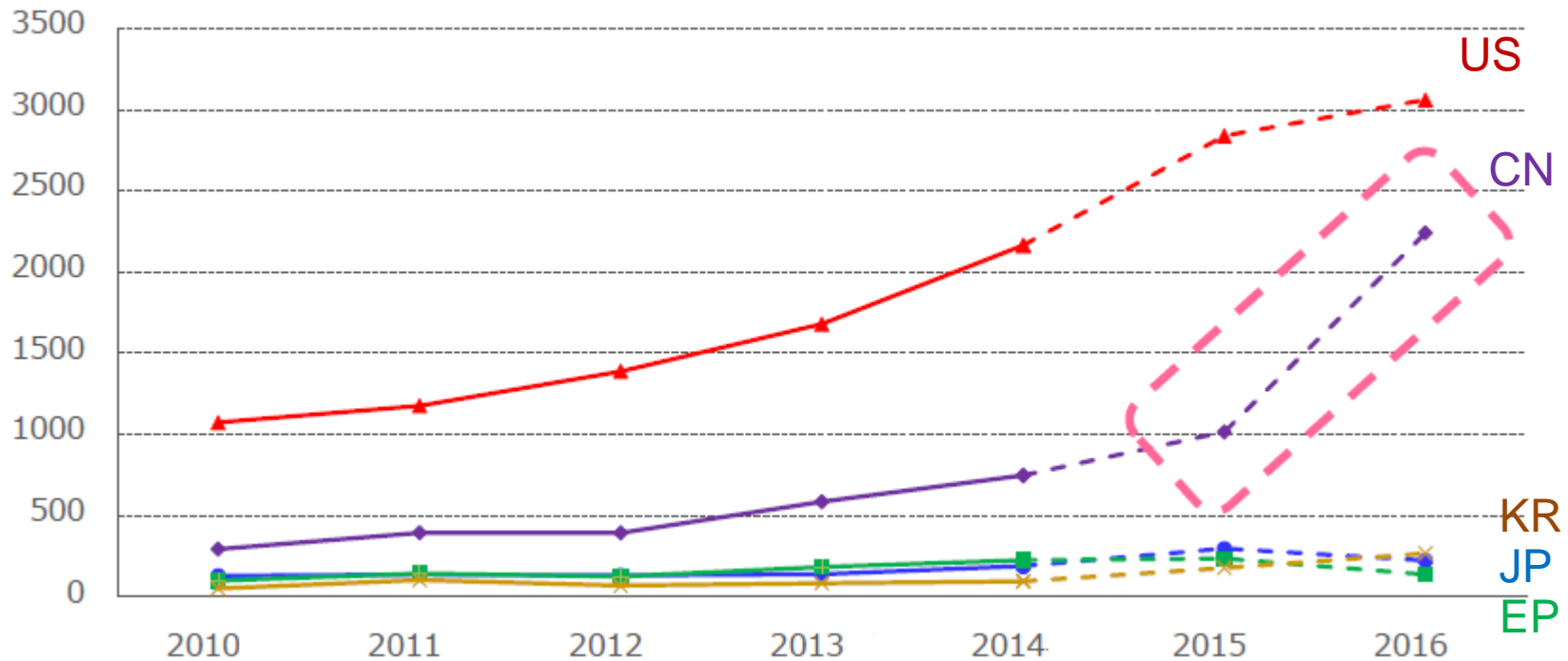
IPC: G06F 15/18, G06N

source: JPO

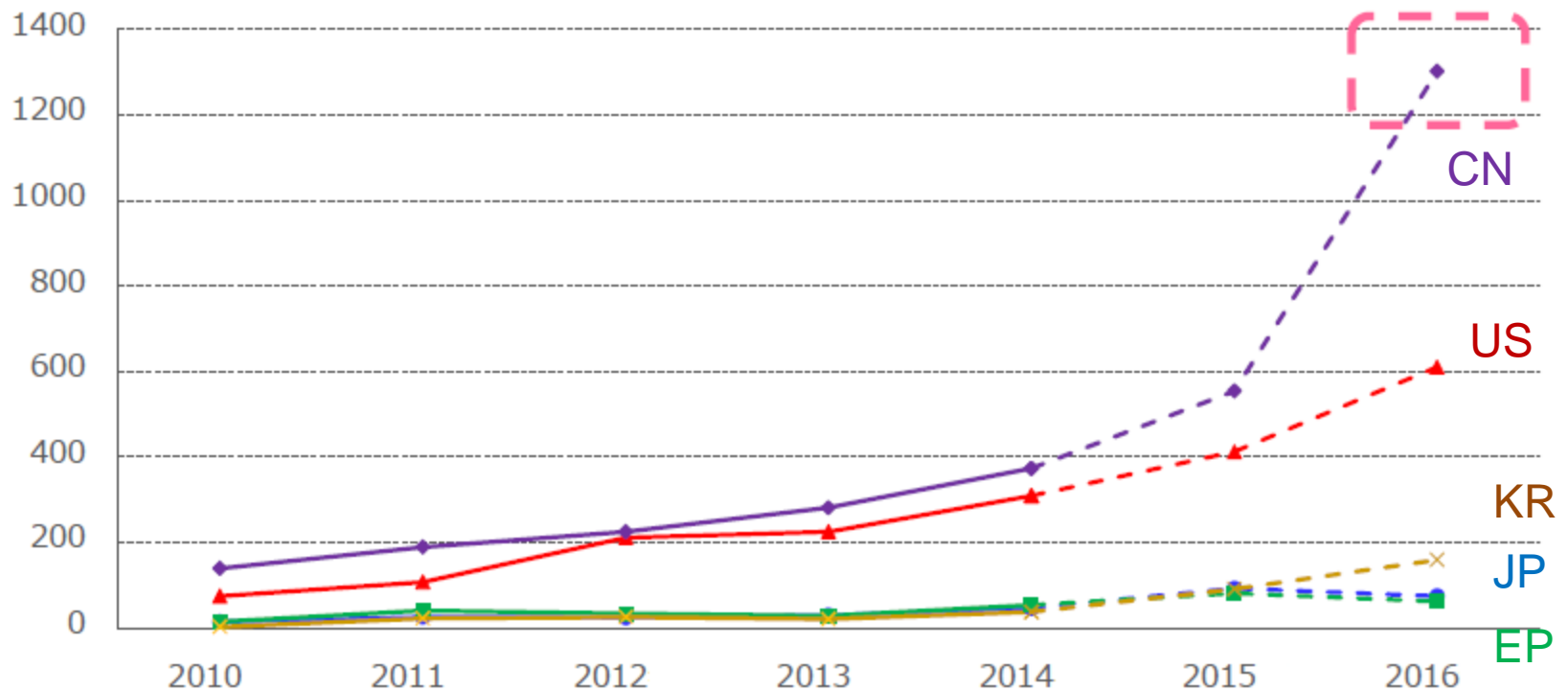# AI-related applications in Japan divided into technical fields

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(Article29(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.
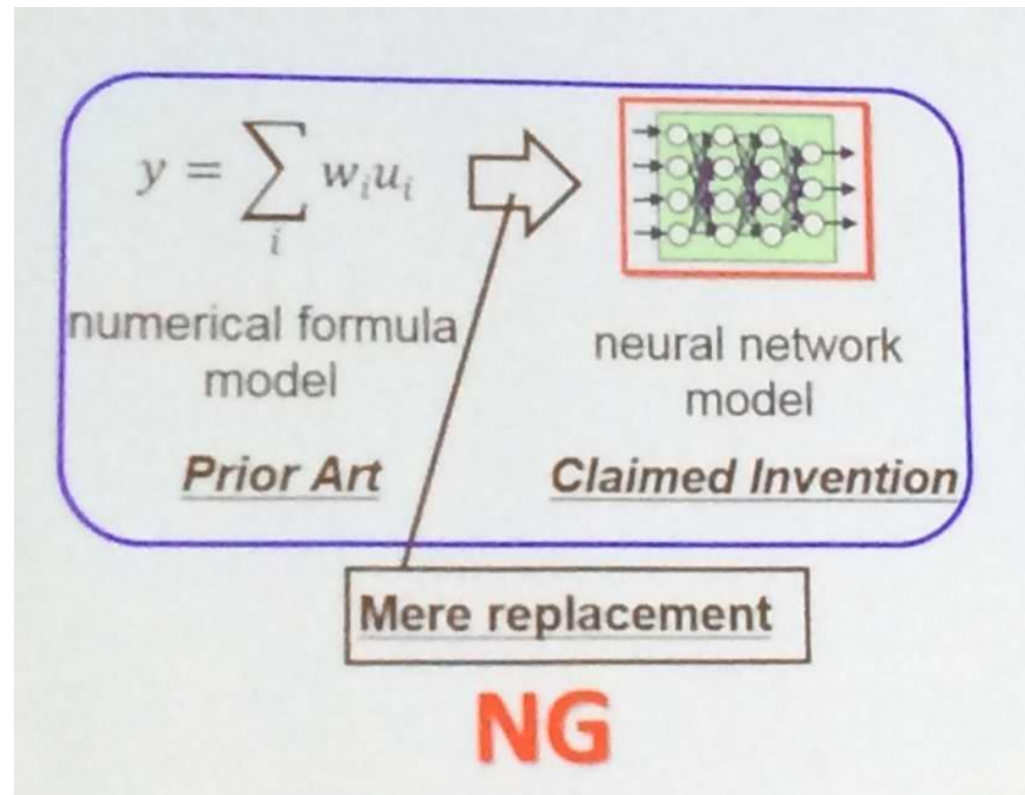
What is advisable to disclose to fulfill enablement requirement

- 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

$$y = \sum_i w_i u_i$$

numerical formula model

Prior Art

neural network model

Claimed Invention

Mere replacement

NG

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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