Utilization of AI at JPO

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Japan Patent Office
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Purpose for making use of AI technology

Change of JPO's work

Advancement of technologies

Expanding search target
Increase in trademark applications
Retirement of experienced officials

Progress of AI technology

Machine Learning

Natural Language

Processing

Deep Learning

Making use of AI technology

Goal!

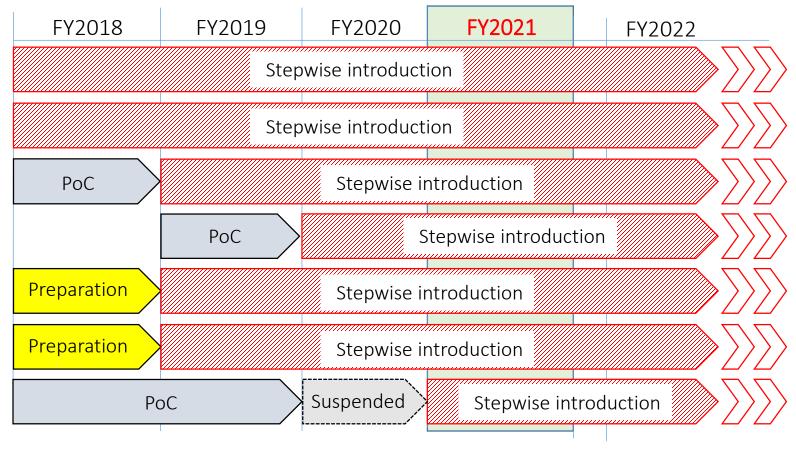
Sophisticated and **efficient** operations

→ Improve user services

Action plan

- JPO has made activities for making use of AI technology based on Action plan since FY2017.
- Action plan was revised in FY2021 based on the result of activities in FY2020.

- 1. Patent classifications
- 2. Prior art searches (Suggesting search query)
- 3. Prior art searches (Patents image search)
- 4. Prior art searches (Re-ranking patent documents)
- 5. Trademark image searches
- 6. Classifications of goods or services
- 7. Prior art searches for design patent

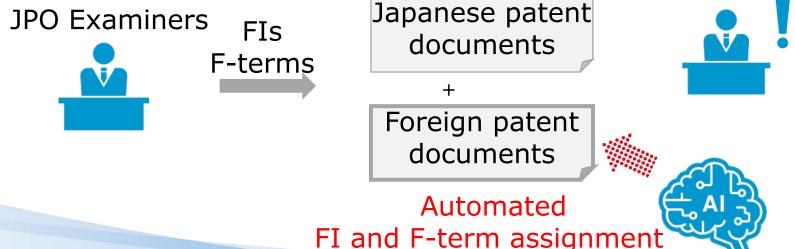


Patent classifications

Main Points

<u>Issue</u>: JPO examiners couldn't use FIs and F-terms (JPO-specific search indexes) to retrieve foreign patent documents though they are useful to retrieve relevant documents to Japanese applications.

<u>Solution</u>: Assigning FIs and F-terms to foreign patent documents automatically, JPO examiners can conduct collective search on Japanese and foreign documents with the indexes.



Examiners can retrieve both Japanese and foreign patent documents collectively from the same technical point of view!

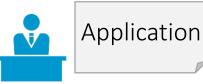
Expanding search query terms

Main Points

<u>Issue</u>: It's difficult for new/reassigned examiners to select effective search query terms.

Solution: Possible classifications, keywords and synonyms based on the accumulated knowledge and experiences of experienced examiners help new/reassigned examiners a lot.

New/Reassigned JPO Examiners



Suggestion System

Knowledge (in advance)

With Advanced Knowledge and Experiences:

- Knowledge of classifications of the experienced technical fields and related technologies
- Rich knowledge of a variety of synon MPS FOR OFFICIAL USE ONLY

Expanded search query terms

Classifications

(assigned/relevant)

A61B34/35

B25J13/00

A61B17/00

Keywords (extracted/synonyms)

robot, manipulator

arm, master, operator, remote

Search Query

(A61B34/35+B25J3/00)

AND

(robot+manipulator+arm+master)

Japan Patent Office

Experienced

JPO Examiners

Patent Image Searches

Main Points

<u>Issue</u>: Sometimes drawings contain very important information especially regarding shapes or structures of things. But text search queries are not so effective to retrieve such useful drawings.

<u>Solution</u>: The information originated from drawings of the application is thought to be useful to obtain relevant drawings.

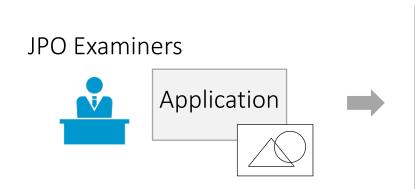
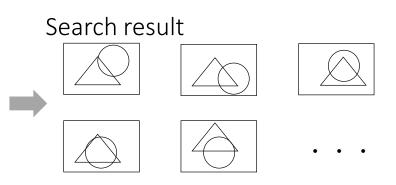


Image Search System

Relevant drawings are retrieved based on:

- keywords embedded to drawings
- similarity of drawings



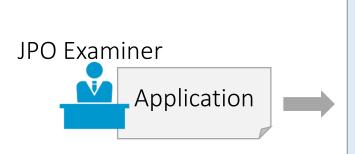
Displaying Ranking of Patent Documents

Main Points

Issue: Examiners had to read hundreds of documents to retrieve a relevant document

Solution: Examiners can read the most important document first if the candidate

documents are ordered by the possibility to be cited.



Search System

Re-rank the documents with the machine-learned model.

The model is learned with:

- cited or not
- similarity of feature words
- difference of the publication years
- similarity of assigned classifications

etc.

Search Results

1. JP2018-100007A

2. JP2018-100005A

3. JP2018-100001A

. . .

100. JP1998-100001A

Possibility to be cited



Thank you!

