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des brevets

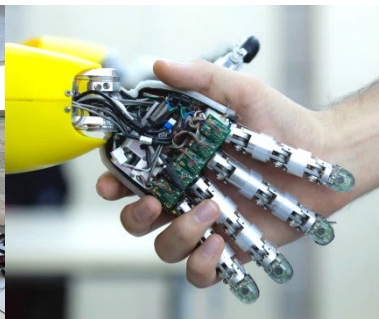
AI and IP; an EPO perspective



Argyrios Bailas



European Patent Office



04 Nov, 2020

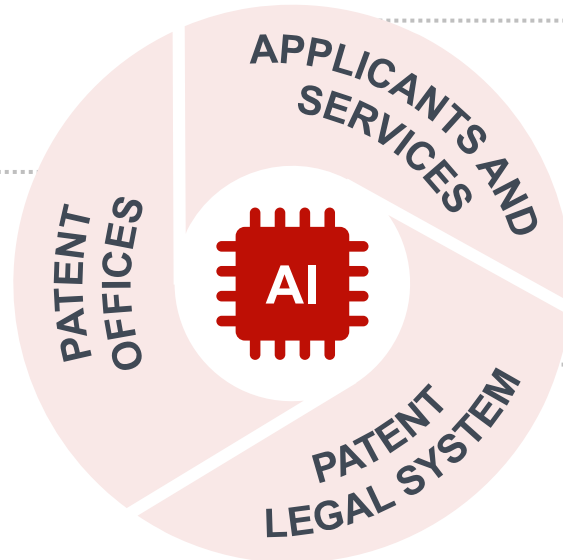
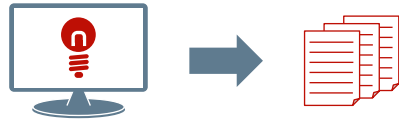
Content

- How does the EPO use AI to support its operations?
- Does the EPO patent AI applications? If so, under which conditions?

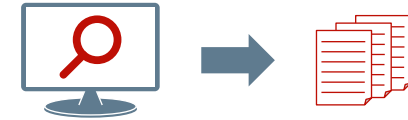
Challenges and opportunities for patent offices

3 key areas

AI as a Computer Implemented Invention



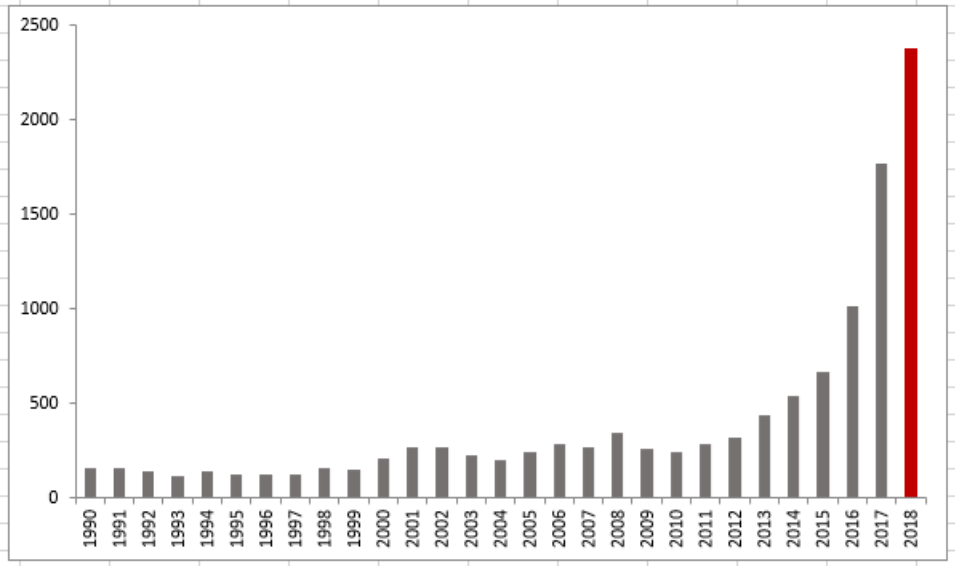
AI finds prior art, invents and drafts patents



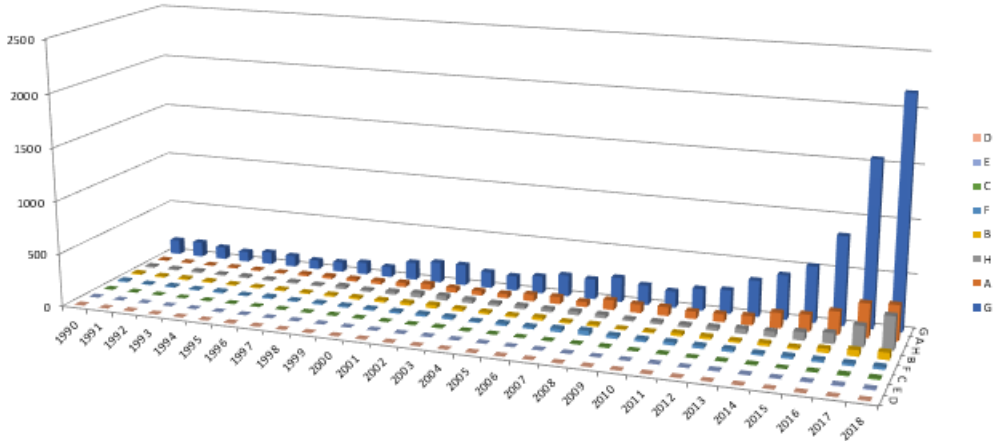
AI processes patents and assists decision making



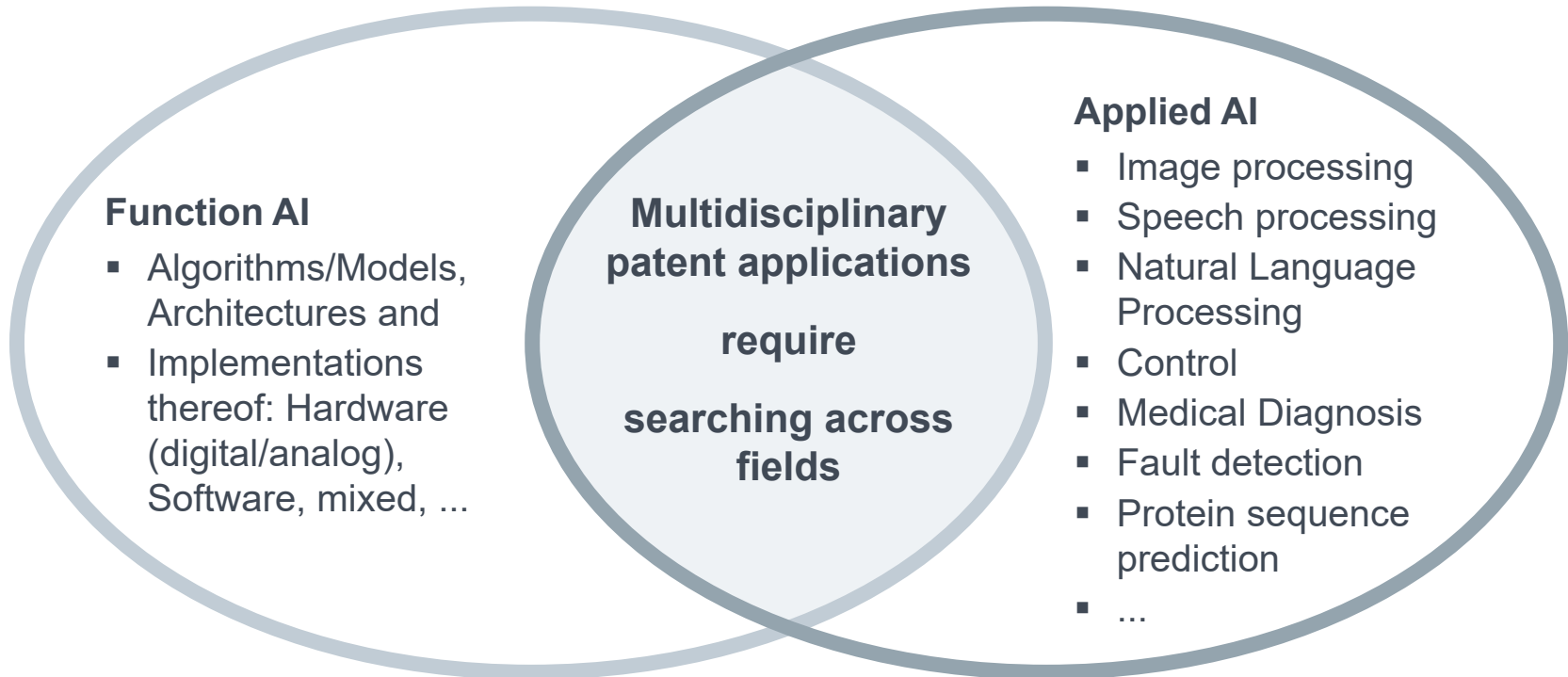
The number of European patent applications in AI technologies corresponds to EP/WO families in the CPC class G06N7, G06N5, G06N99 /005 and G06N3, corresponding to core AI



A set of class symbols related to AI was compiled also, based on the description of the classification symbol



Relevant fields – Function/Applied AI



How does EPO invest into its AI tooling

Within **Strategic Plan 2023**: Artificial Intelligence Programme

Improve current tooling with in-house expertise and state of the art solutions for

- Pre-Classification
- Auto-Classification
- Neural Machine Translation
- Neural Ranking & PreSearch
- Figure Search



- Better quality
- More relevant results
- More control
- Better feedback and synergies
- Explainability

EPOs **Data Science team** together with **experts from DG1** are building solutions in three projects: Natural Language Processing, Computer Vision and Machine Translation, targeting multi-modal patent information

AI “Mixed-Type Inventions” and the Two-Hurdle Approach

1st Hurdle

**Art. 52 (2) and
(3) EPC**

- AI and ML computational models and algorithms are “per se” of abstract nature
- Excluded when claimed “as such”
- Solution: technical means, CII claim forms

2nd Hurdle

**Art. 54, 56, 84
EPC et al**

- All features contributing to the Technical Character taken into account for assessment of inventive step
- ? Do(es) the Mathematical Method (steps) contribute to the Technical Character of the Invention ?
- G-VII, 5.4 Claims comprising technical and non-technical features

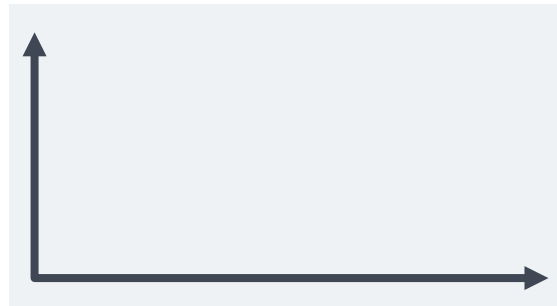
**Patentability
of
AI and ML**

Two dimensions to contribute to technical character

Do(es) the AI and ML Method (steps) contribute to the Technical Character of the Invention?

Two dimensions:

- By being adapted to a specific technical implementation
- By its application to a field of technology



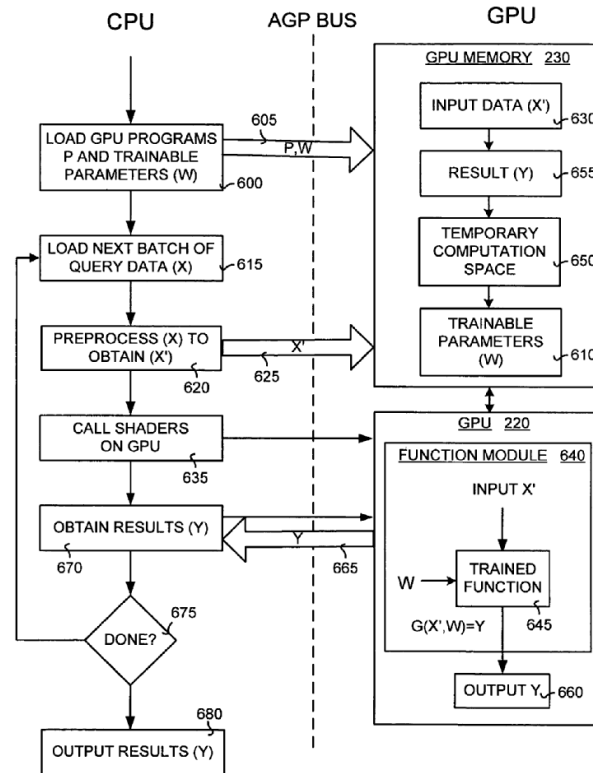
Dimension 1: Specific technical implementation

how do the AI and ML method steps contribute to the technical character of the invention ?

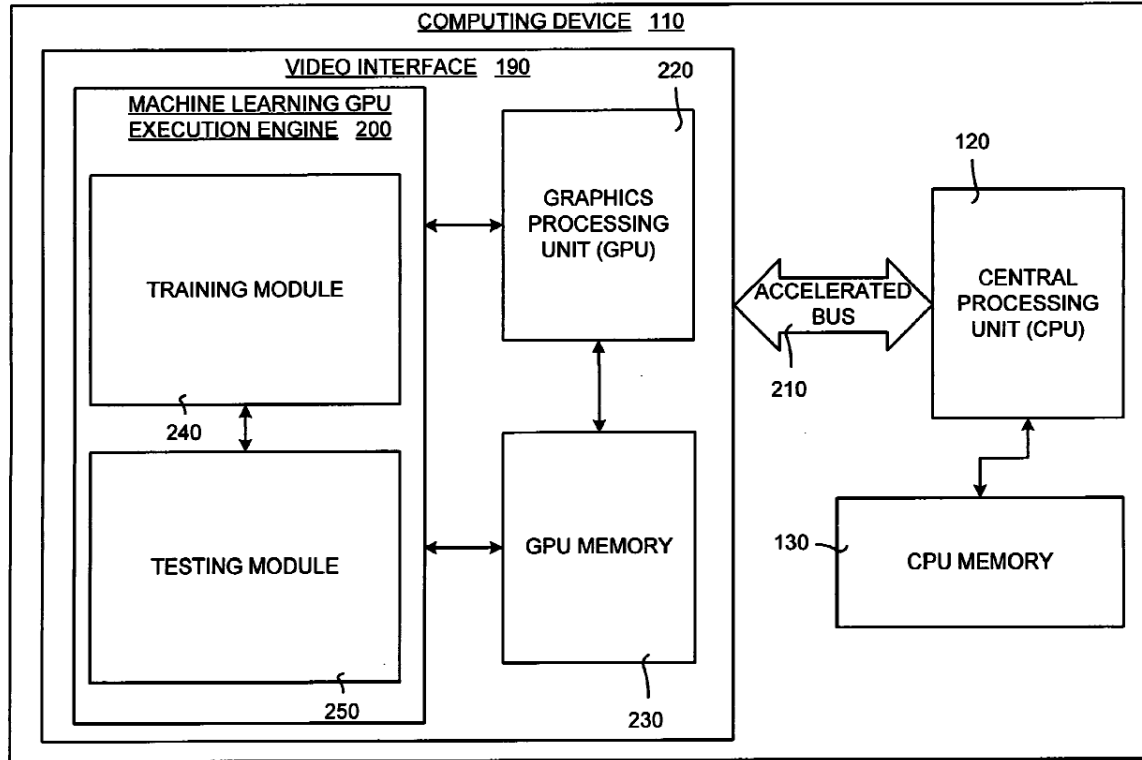
Claim directed to a specific technical implementation

- AI algorithm is specifically adapted for that implementation
- AI design motivated by technical considerations of the internal functioning of the computer

Dimension: specific technical implementation



Dimension: specific technical implementation



Dimension 2: Technical application

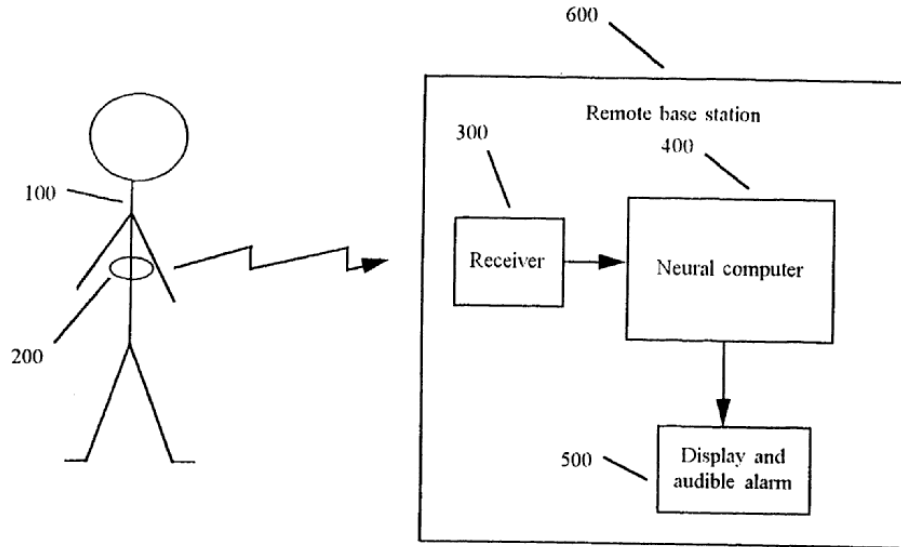
how do the AI and ML method steps contribute to the technical character of the invention ?

if, and to the extent that, in the context of the invention, they serve a technical purpose:

- By technical application, i.e to solve a technical problem in a technical field
- Specific, not generic like “controlling a technical system”
- Not sufficient that purpose “may” be served
- The claims need to be functionally limited to technical purpose

Dimensions Technical Application

Use of Neural Networks in heart monitoring apparatus for identifying irregular heartbeats



Dimensions Technical Application

Enhanced
Classifier for
classification of
digital images
based on
expanded
training set

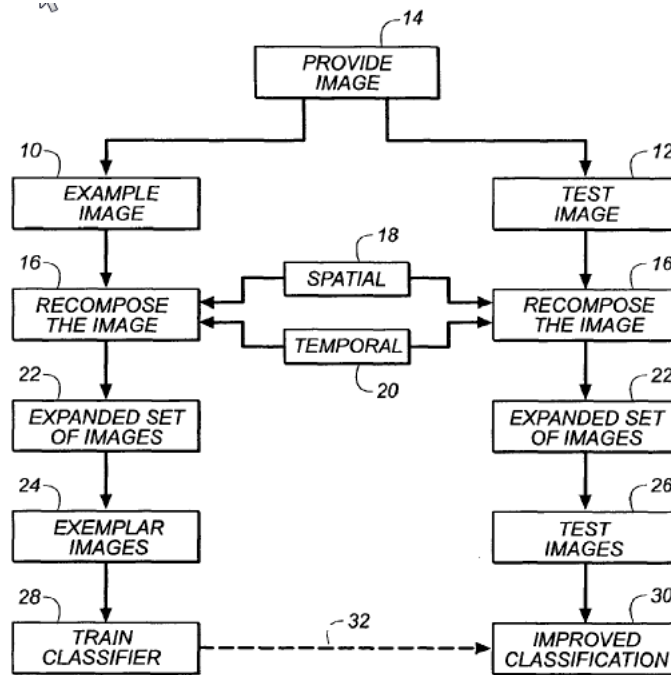


FIG. 9

Thank you for your attention!

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**UNITED STATES
PATENT AND TRADEMARK OFFICE**



Artificial intelligence (AI) at the USPTO

Matthew Such, Group Director

November 4, 2020

FICPI 19th Open Forum

UNITED STATES
PATENT AND TRADEMARK OFFICE



Artificial intelligence (AI) at USPTO

AI policy

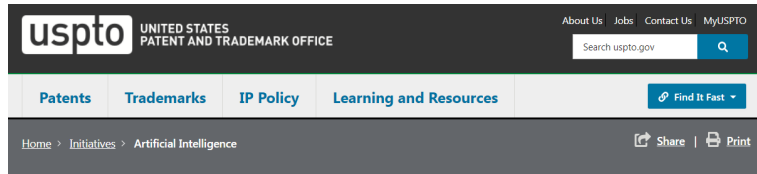
The USPTO is engaging with the public on AI policy

- January 31, 2019 USPTO AI Conference:
 - Six panels covering patents, copyrights, trademarks, IP enforcement, international perspectives, and economics
 - Over 200 people attended in person with hundreds online

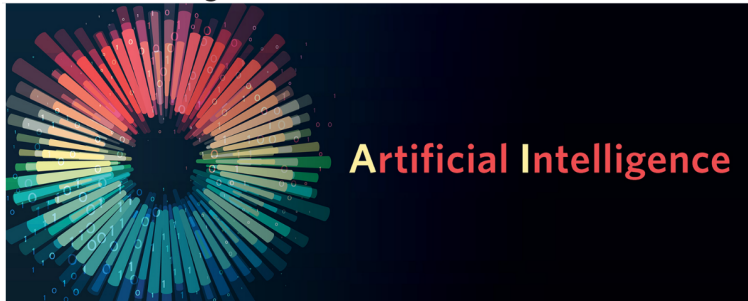
www.uspto.gov/about-us/news-updates/remarks-director-iancu-artificial-intelligence-intellectual-property



USPTO AI landing page



Artificial Intelligence



"One of the agency's top priorities is to ensure that the United States maintains its leadership in innovation, especially in emerging technologies such as artificial intelligence (AI). To that end, the USPTO has been actively engaging with the innovation community and experts in AI to determine whether further guidance is needed to promote the predictability and reliability of intellectual property rights relating to AI technology and to encourage further innovation in and around this critical area." —USPTO Director Andrei Iancu



Engagement

Browse USPTO leadership's speeches, blogs, and events about AI and learn more about our approach.

> [View past engagements](#)



Notices

Find our Federal Register Notices (FRNs) and other important USPTO actions concerning AI policy.

> [FRNs \(patent-related\)](#)
> [FRNs \(non-patent IP related\)](#)
> [Petition Decision – Inventorship Limited to Natural Persons](#)



Resources

Discover other resources for AI and learn about cross-government goals shared by other federal entities.

> [AI resources and goals](#)

Direct link:
www.uspto.gov/initiatives/artificial-intelligence



New report on AI invention



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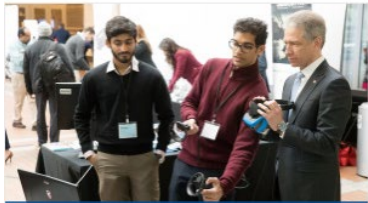
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DIRECTOR'S BLOG

USPTO issues second Federal Register Notice on artificial intelligence and innovation



REPORT FROM THE CHIEF ECONOMIST

USPTO report on the diffusion of AI across technologies, organizations, inventor-patentees, and U.S. regions



SPOTLIGHT

Public Views on Artificial Intelligence and Intellectual Property Policy

OFFICE OF THE CHIEF ECONOMIST
IP DATA HIGHLIGHTS

Number 5, October 2020

Inventing AI

Tracing the diffusion of artificial intelligence with U.S. patents



New report on AI and IP policy



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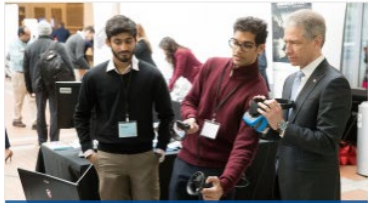
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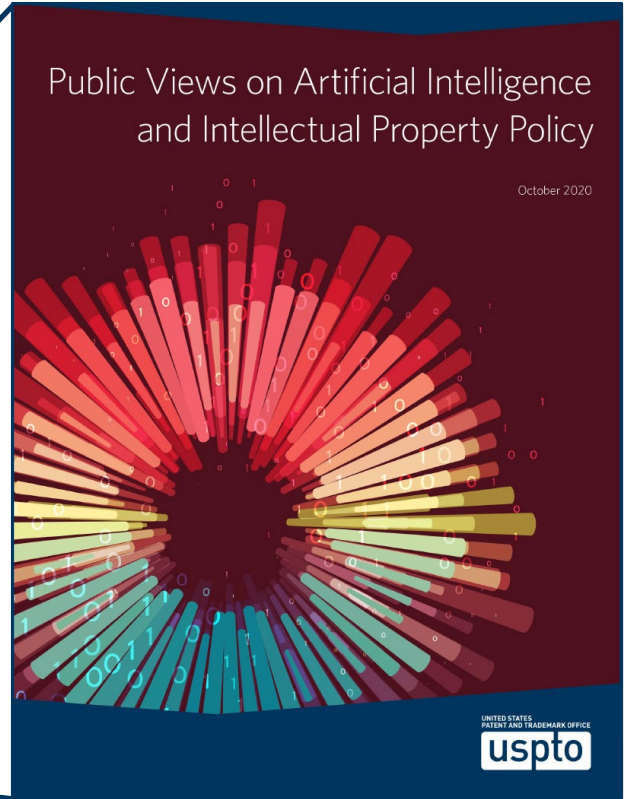
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SPOTLIGHT

Public Views on Artificial Intelligence and Intellectual Property Policy



Artificial intelligence (AI) at USPTO

AI tools

Artificial intelligence strategy

- 2018-2022 USPTO Strategic Plan:
 - Optimize development and delivery of information technology tools, including artificial intelligence and machine learning, for internal users of patent systems to ensure that they have the tools they need for a thorough search and examination.*
 - Explore artificial and business intelligence to assist trademark customers.‡

* Goal I: Optimize patent quality and timeliness; Objective 3: Foster innovation through business effectiveness

‡ Goal II: Optimize trademark quality and timeliness; Objective 3: Foster business effectiveness

AI priorities for patents

- Patent search
- CPC auto-classification
 - Full classification picture
 - Indicators for claimed subject matter
- Image search
 - Designs

Patent AI prototype for search

- The USPTO has built a prototype AI-based search tool
- Integrated with next generation search system
 - Cloud-based solution
 - AI can identify documents
 - AI suggests search areas to consider
 - Exploring feature design to provide users insights into AI reasoning
 - Automatically captures feedback from users to improve AI models

Opportunities for value

- Search effectiveness
 - Contribution of AI to increase retrieval of relevant prior art while simultaneously reducing retrieval of irrelevant prior art
 - Contribution of AI features to assist examiners in reviewing prior art
 - Contribution of AI in suggesting relevant search areas
- Degree that AI provides enhancements to search effectiveness across technology areas
- Degree that feedback yields updated AI models that provide further enhancements / improvements

Applying AI to classification

- The USPTO is developing and validating an AI-based auto-classification system for CPC
 - Full classification of patent documents
 - Identification of symbols associated with claims
- **Potential benefits include:**
 - Ensuring that subject matter is thoroughly classified
 - Consistency of symbols assigned
 - Supporting quality assurance of symbols
 - Operational efficiencies



The USPTO auto-classifier

- Suggests CPC symbols for US patent applications and text
- Includes indicators for claimed subject matter
- Uses “explainable AI” to advance user experience
 - Front-end prototype enables direct interaction with auto-classifier
 - Decision-making of underlying AI models is contextualized for users (e.g. links relevant text and claims with associated CPC symbols)
 - Able to collect feedback from users for improving AI models
- Leveraging internal quality assurance processes



Current activity and next steps

- The USPTO is currently assessing performance and maturing the capability with a data-driven approach
 - Some examples where tool appears to produce output closer to classifications already assigned to patent documents
 - Some examples where tool appears to produce output divergent from classifications already assigned to patent documents
 - Classification experts performing intellectual validation
 - Data science applied to continuously update and improve AI models
- Implementation of system in use cases where necessary performance criteria are met

Image search

- The USPTO is exploring solutions for patents
- An effective capability would enable new ways to retrieve prior art
- Request for Information (RFI) issued September
 - Specific to the designs patents
 - Closed October 14
 - Submissions are being reviewed



Thank you!

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