Baker McKenzie.

Artificial Intelligence and its Impact on Intellectual Property

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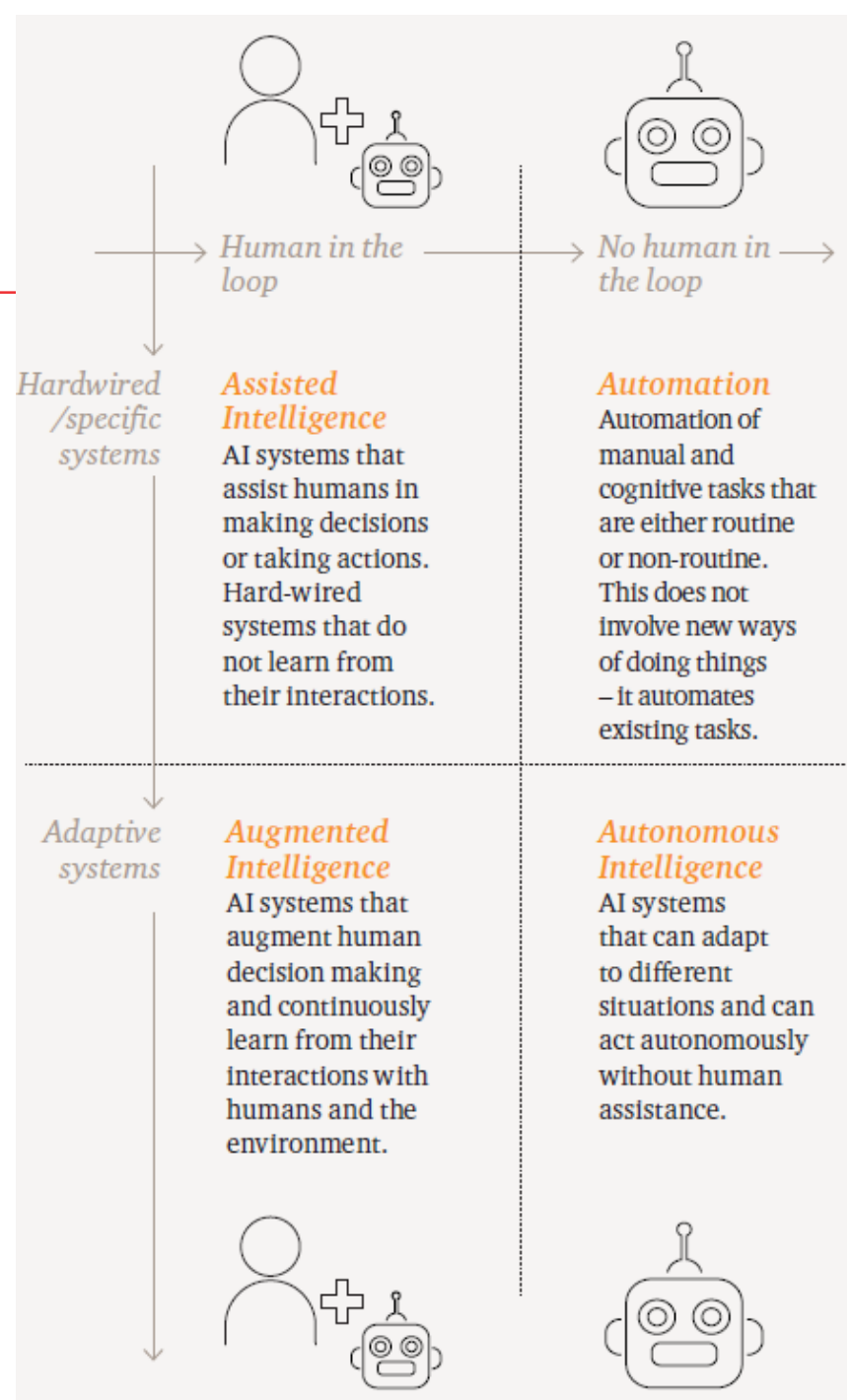# 1 Artificial Intelligence

Artificial Intelligence

What is AI ?

Pepper, the robot ?

IBM's Watson ?

HAL 9000 ?

Skynet ?

Source: PWC, Sizing the prize What's the real value of AI for your business and how can you capitalise? https://www.pwc.com/gx/en/issues/analytics/assets/pwc-ai-analysis-sizing-the-prize-report.pdf

	Human in the loop	No human in the loop
Hardwired /specific systems	**Assisted Intelligence** AI systems that assist humans in making decisions or taking actions. Hard-wired systems that do not learn from their interactions.	**Automation** Automation of manual and cognitive tasks that are either routine or non-routine. This does not involve new ways of doing things – it automates existing tasks.
Adaptive systems	**Augmented Intelligence** AI systems that augment human decision making and continuously learn from their interactions with humans and the environment.	**Autonomous Intelligence** AI systems that can adapt to different situations and can act autonomously without human assistance.

AI is big

ARTIFICIAL INTELLIGENCE

The next digital frontier?

The current AI wave is poised to finally break through

Investment in AI is growing at a high rate, but adoption in 2017 remains low

In 2016, companies invested

$26B to **$39B**

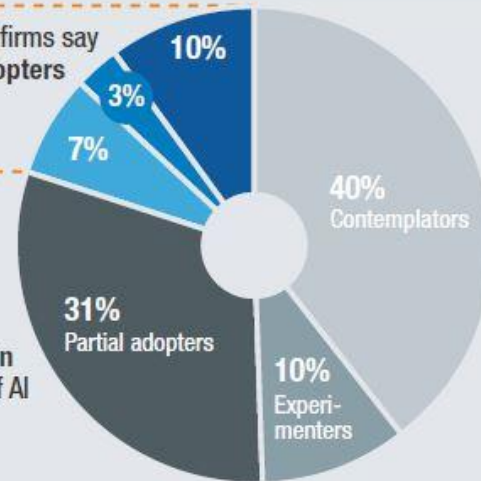in artificial intelligence

TECH GIANTS
$20B to $30B

STARTUPS
$6B to $9B

3x External investment growth since 2013

20% of AI-aware firms say they are **adopters**
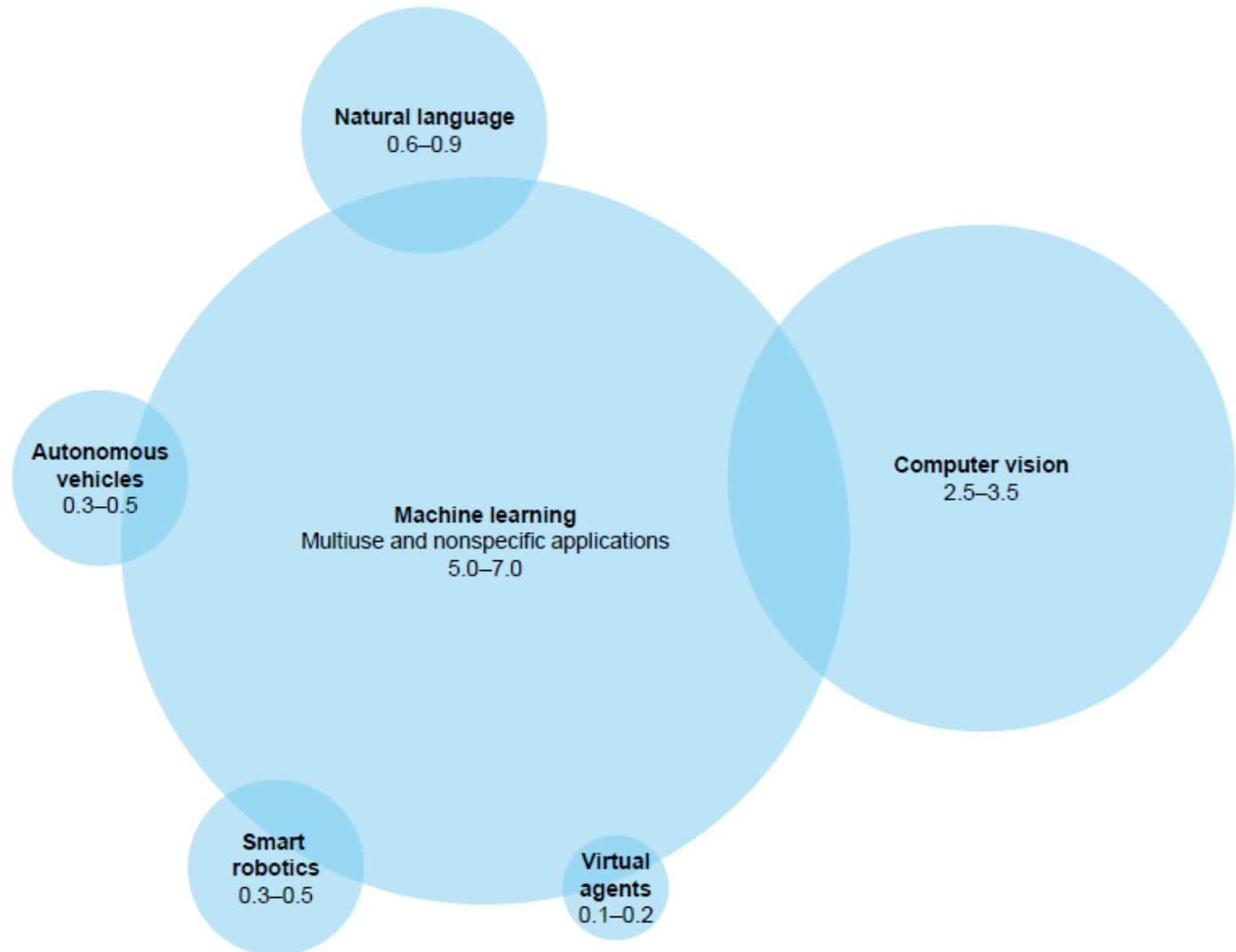
- 3+ technologies
- 2 technologies
- 1 technology

41% of firms say they are **uncertain** about the benefits of AI

10%
3%
7%
40% Contemplators
31% Partial adopters
10% Experi-menters

Source : McKinsey Global Institute, Artificial intelligence the next digital frontier?

Artificial Intelligence

AI invest-ments

External investment in AI-focused companies by technology category, 2016[1]
$ billion

Natural language
0.6–0.9

Autonomous vehicles
0.3–0.5

Machine learning
Multiuse and nonspecific applications
5.0–7.0

Computer vision
2.5–3.5

Smart robotics
0.3–0.5

Virtual agents
0.1–0.2

1 Estimates consist of annual VC investment in AI-focused companies, PE investment in AI-related companies, and M&A by corporations. Includes only disclosed data available in databases, and assumes that all registered deals were completed within the year of transaction.

SOURCE: Capital IQ; Pitchbook; Dealogic; McKinsey Global Institute analysis

Singapore initiatives

AI.SG

AI Singapore was set up in May 2017 with an up to S$150 million fund to catalyse, synergise and boost Singapore's AI capabilities

IMDA ARTIFICIAL INTELLIGENCE INDUSTRY INITIATIVES, 3 Nov 2017

"IMDA hopes to make AI adopted as pervasively and ubiquitously as smartphones. To do so, we will drive industry adoption by improving businesses' understanding of the value that AI solutions can have on their enterprise, introducing suitable solutions for their needs; and supporting collaborations to showcase demonstrative projects in key sectors."

Singapore initiatives

National Speech CorpusThe

Enhanced Accreditation@SG Digital programme

Guide to Data Sharing

Regulatory sandbox

Model AI Governance Framework (won WSIS Prize 2019)

Decisions made by AI should be **EXPLAINABLE, TRANSPARENT & FAIR**

AI systems should be **HUMAN-CENTRIC**

AI in the consumer goods industry

AI IS THE NEW UI

AI is an enabler for individualized customer engagement

With the potential of AI, there's good news for leading consumer goods companies. AI will help enable consumer goods companies to embed their brands into their customers' everyday lives.

For high-engagement products, AI could open the door, through a conversational interface, to a much more personalized, interactive and trusted ongoing relationship between company and consumer.

For low-engagement products, AI offers the potential to eliminate the user interface altogether and drive individualized predictive replenishment on a huge scale.
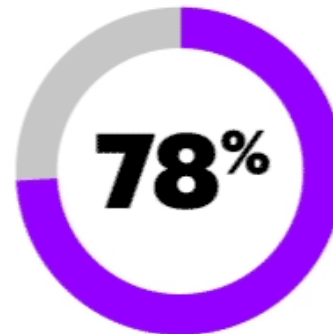
78% OF CONSUMER GOODS EXECUTIVES ACKNOWLEDGE **AI'S GAME CHANGING** POTENTIAL FOR CUSTOMER INFORMATION AND INTERACTIONS.

Source : Accenture Technology Vision for Consumer Goods 2017

AI in the consumer goods industry

"The threat is that there will be far fewer opportunities for consumer goods companies to get their brands in front of the consumer. Predictive replenishment removes the need for the consumer to make decisions about which product they'll choose on a daily, weekly or monthly basis. For example, a consumer might set up a subscription with Amazon to automatically select the best deal for laundry detergent. That would remove the need for the consumer to ever think again about that product. It also means Amazon becomes the face of the purchase decision, consigning manufacturers to a "fight to the death" promotional battle."

Source : Accenture Technology Vision for Consumer Goods 2017

AI in the consumer goods industry

"As an example, one apparel manufacturer is developing a virtual personal shopping assistant that aims to act like an experienced in-store salesperson. The prototype app, Expert Personal Shopper, was developed by Fluid Inc. using IBM's Watson platform. Speech recognition enables customers to interact via voice with the app, which uses NLP [natural language processing] to understand customer questions so that it can make appropriate recommendations based on its analysis of product information. Machine learning is used to improve the quality of the app's recommendations over time."

Source : Prescouter, How AI Is Redefining the Consumer Goods Industry

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AI and IP

Intellectual Property in AI

Trade Marks

Patents

Trade secrets

Copyright

Data
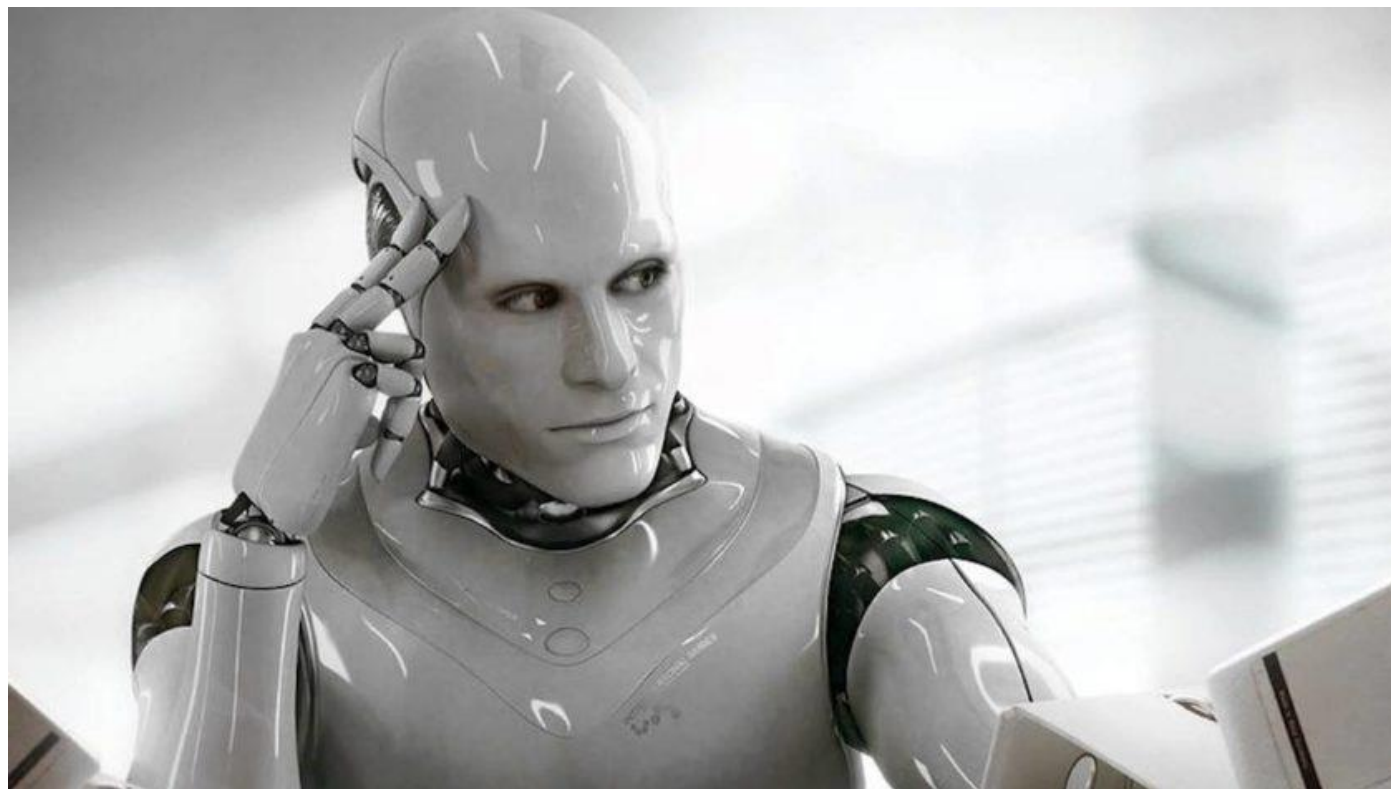
AI and Trademarks

Time and cost savings are expected to be the biggest benefits of AI, which will also impact on trademark prosecution clearance searches, according to 93% of respondents to Hogan Lovells' Brand Benchmarking survey 2018

Also for enforcement, AI is expected to facilitate online infringements searches and the preparation of take down notices

But longer term issues such as whether current TM law are fit for purpose in AI enabled world are starting to be raised

- Can a shopping bot be confused ?

- Can a shopping bot be a secondary infringer if it suggests a counterfeit or similar product ?

AI and Trademarks

Cosmetic Warriors Ltd & Anor v amazon.co.uk Ltd & Anor [2014] EWHC 181 (Ch) (10 February 2014)

Lush Soap at Amazon.co.uk
www.amazon.co.uk/lush+soap
amazon.co.uk is **rated** *****
Low prices on **Lush** Soap
Free UK Delivery on Amazon Orders.

Bomb Bath at Amazon.co.uk
www.amazon.co.uk/bomb+bath
amazon.co.uk is **rated** *****
Low prices on Bomb Bath
Free UK Delivery on Amazon Orders.

AI and Patents

SINGAPORE

156
Patents relating to A.I. published in 2013-2017

Beijing DIDI, Microsoft Technology, Mastercard International and Visa are leading in A.I. patent filings in Singapore from 2013-2017.

TOP FILING AREAS UNDER A.I.
- Digital computing or data processing
- IT methods for specific business sector
- IT methods for general administration and management
- Commerce, e.g. Shopping or e-commerce
- Bioinformatics, medical informatics

TRENDS IN PATENTING FOR
ARTIFICIAL INTELLIGENCE

31.1K
Patents relating to A.I. published in 2013-2017

21%
Average growth of A.I. patents per annum in 2013-2017

10K
A record high of A.I. patents published in 2017

TOP GLOBAL FILERS IN A.I. INCLUDE
- IBM
- SAMSUNG ELECTRONICS
- MICROSOFT
- AT&T
- AVAYA

China technology giants, like Baidu and Huawei are leading the way in A.I. development, amongst other international players such as Google and Microsoft.

TOP COUNTRIES/REGIONS OF PROTECTION

12.2K   9.4K   2.8K   1.9K   1.5K

TOP GLOBAL FILING AREAS UNDER A.I.
- Digital computing or data processing
- Pattern recognition (e.g. fingerprints)
- Control of digital information transmission
- User Interface, input/output arrangement (e.g. head-tracking, eye-tracking)
- IT methods for specific business sector

Face robots and animated artificial faces, speech or voice analysis, and computer systems based on biological model are growing the fastest globally in terms of A.I. filing.

AI and Patents

Class G06N (computer systems based on specific computational models), consisting of sub-classes:

1.1. G06N 3/00 (computer systems based on biological models)

1.2. G06N 5/00 (computer systems utilizing knowledge based models)

1.3. G06N 7/00 (computer systems based on specific mathematical models)

1.4. G06N 99/00 (subject matter not provided for in other groups), further consisting of sub-classes:

1.4.1 G06N 99/002 (quantum computers)

1.4.2 G06N 99/005 (learning machines)

1.4.3 G06N 99/007 (molecular computers)

2. Sub-class G06F 17/27 (handling natural language data with automatic analysis, e.g. parsing)

3. Sub-class G06F 17/28 (handling natural language data with processing or translating of natural language)

AI and Patents

Consistent with the recent explosion in investments in AI, there has been an upswing in the number of AI patents granted in the U.S.—increasing from **_2,855_** U.S. patents issued between 1998 and 2007 to **_12,756_** U.S. patents issued between 2008 and 2017.

Even within the last ten years, the number of AI patents that were annually issued in the U.S. skyrocketed, for example, increasing from **_512_** in 2008 to **_2,317_** in 2017,7 reaffirming heightened investments and technological advancements in AI.

AI patents that constituted large percentages of patent activities in the 1998-2007 timeframe continued to see significant growth, such as patents relating to handling natural language data with automatic analysis (e.g., parsing) (G06F 17/27), which remained the leading type of patents granted.

The greatest diversification in the types of AI patents issued in the 2008-2017 timeframe came with the 8% increase in the "other groups" patents (G06N 99/00), signaling substantial growth in the AI fields of quantum computers (G06N 99/002), learning machines (G06N 99/005), and molecular computers (G06N 99/007), which is consistent with the recent advancements in machine learning.

AI and Patents

But:

- Software patents may not be patentable everywhere;

- patents have a limited life;

- patents do not protect data compilations, such as AI training sets or a programmer's particular expression of source code (which is protected by copyright), or other types of proprietary information (that constitute a trade secret).

AI and Patentability

Artificial Intelligence Collides with Patent Law

White Paper

WORLD ECONOMIC FORUM
COMMITTED TO IMPROVING THE STATE OF THE WORLD

Center for the Fourth Industrial Revolution

April 2018

Patent law issues impacted by AI
- The patent subject-matter eligibility standard for AI
- Legal framework for the patentability of "AI patents
- Discussion points on the present legal standard
- Patentability and inventorship issues for AI generated inventions
- Legal considerations for patentability and inventorship for AI
- Discussion points on patentability
- Discussion points on inventorship
- Liability issues for patent infringement by AI
- Legal framework for patent infringement liability
- Discussion points on patent infringement liability
- Nonobviousness standard for AI
- Legal framework for nonobviousness
- Discussion points on how to defne a "person of ordinary skill in the art"

AI and Trade secrets

The decision to seek a patent may have unintended consequences— if a patent is sought but not obtained, or granted and then invalidated, the subject matter may have become public, rendering not only patent protection but also trade secret protection unavailable.

Many AI system elements are well-suited for trade secret protection, such as: neural networks, training sets, data output, software including underlying AI code and AI-generated code, and learning algorithms – i.e. what's in the "black box".

But need for robust organisational, electronic and physical protection measures to keep it "secret" may mean limiting it to the "crown jewels".

AI and Copyrights

Need for human author

Who is the AI's employer ?

Originality and compilations of facts

Protection of expression vs idea / functionality

Registration of "versions"

AI and Data

No 'ownership' of data ?

No 'ownership' of personal data ?

Right to object to profiling and automated decision making

Repurposing of data without consent

Legitimate interest and alternative grounds of processing / exceptions

Anonymisation and pseudo- anonymisation

Who is the 'organisation' / data controller ? Are there joint controllers ?

Baker McKenzie.