AI inputs and outputs, in the eyes of Copyright Law

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23 August 2018

Who am I?

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Course Agenda

- Introduction

- Part 1: Intellectual Property Law at a glance

- Part 2: Closer look to Copyright Law

- Part 3: Artificial Intelligence in the blink of an eye

- Part 4: Focus on the inputs – Is feeding the machine infringing copyright law?

- Part 5: Focus on the outputs – Are AI productions eligible for copyright protection?

- Conclusion

Introduction

Introduction

« (…) **Like the steam engine or electricity in the past, AI is transforming our world, our society and our industry**. Growth in computing power, availability of data and progress in algorithms have turned AI into one of the **most strategic technologies of the 21st century**. The stakes could not be higher. **The way we approach AI will define the world we live in** (…) »

Source: EU Commission, Communication *Artificial Intelligence for Europe*, Brussels, 25.4.2018, COM(2018) 237

Introduction

- **Overall private investments in AI in 2016 €**
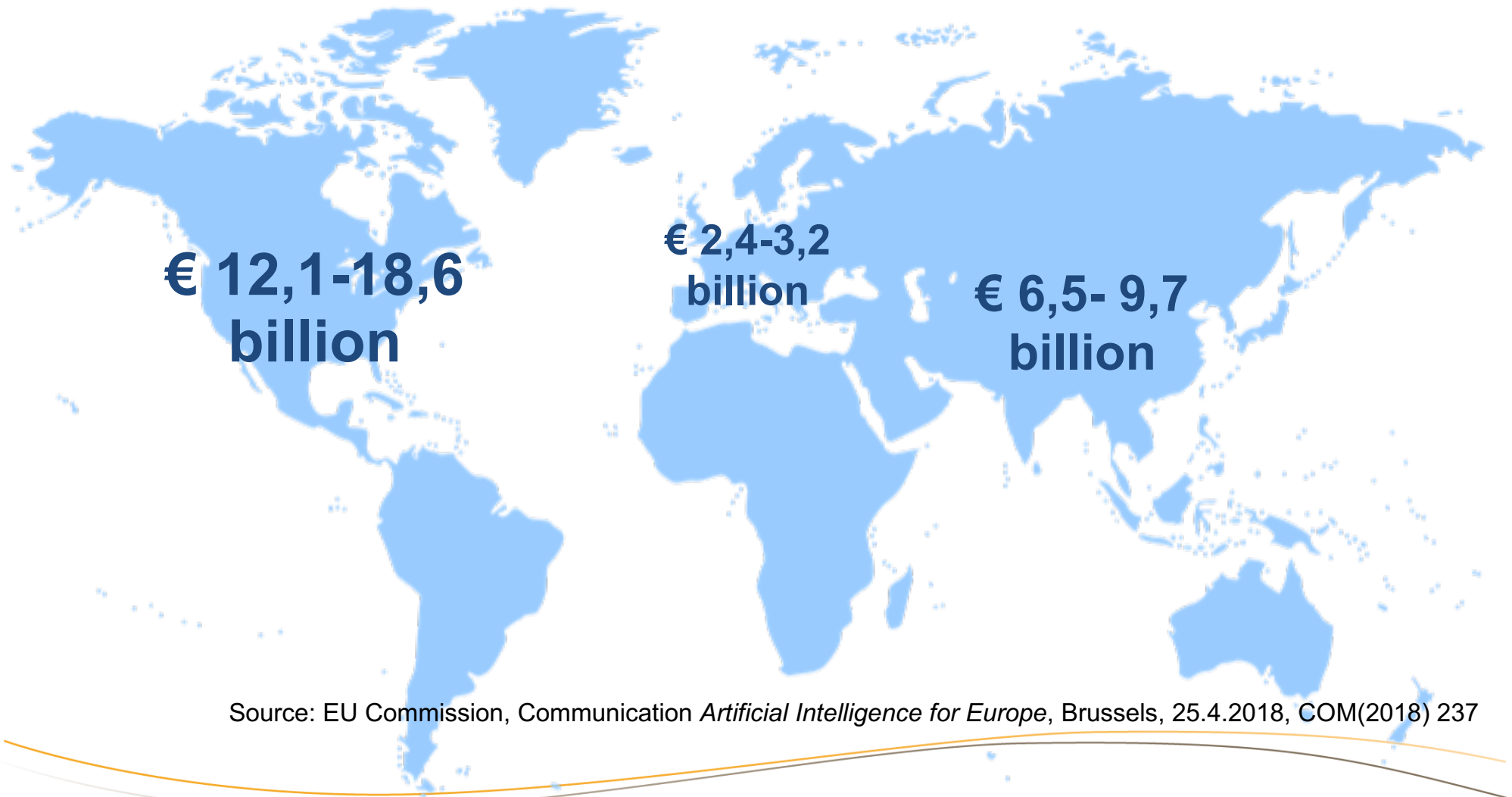
€ 12,1-18,6 billion

€ 2,4-3,2 billion

€ 6,5- 9,7 billion

Source: EU Commission, Communication *Artificial Intelligence for Europe*, Brussels, 25.4.2018, COM(2018) 237

Introduction

« (…) Public and private **research and development investments in AI** in the EU last year (2017) were estimated to total EUR 4-5 billion. **The EU as a whole (public and private sectors combined)** should aim to increase this investment to **at least EUR 20 billion by the end of 2020**. It should then **aim for more than EUR 20 billion per year over the following decade** (…) »

Introduction

« (…) **Reflection will be needed on interactions between AI and intellectual property rights**, from the perspective of both intellectual property offices and users, with a view to fostering innovation and legal certainty in a balanced way (…) »

Source: EU Commission, Communication *Artificial Intelligence for Europe*, Brussels, 25.4.2018, COM(2018) 237

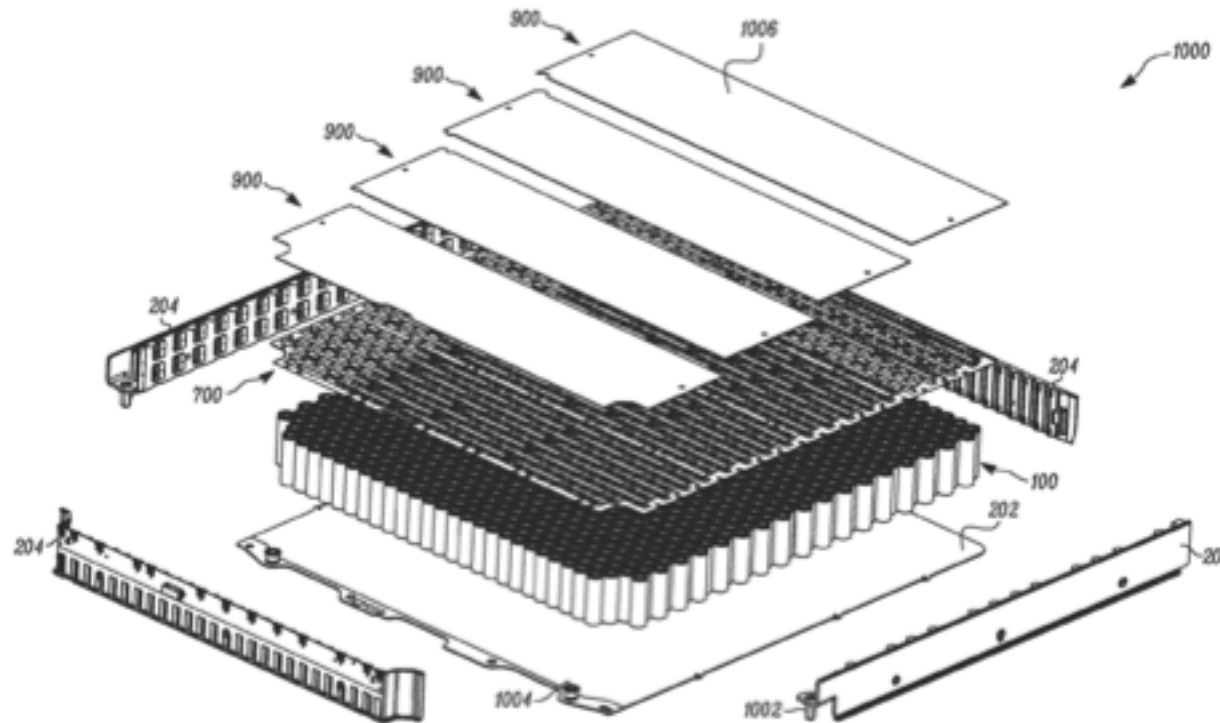# Part 1: Intellectual Property law at a glance

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Economics & Management

Intellectual Property Law at a glance
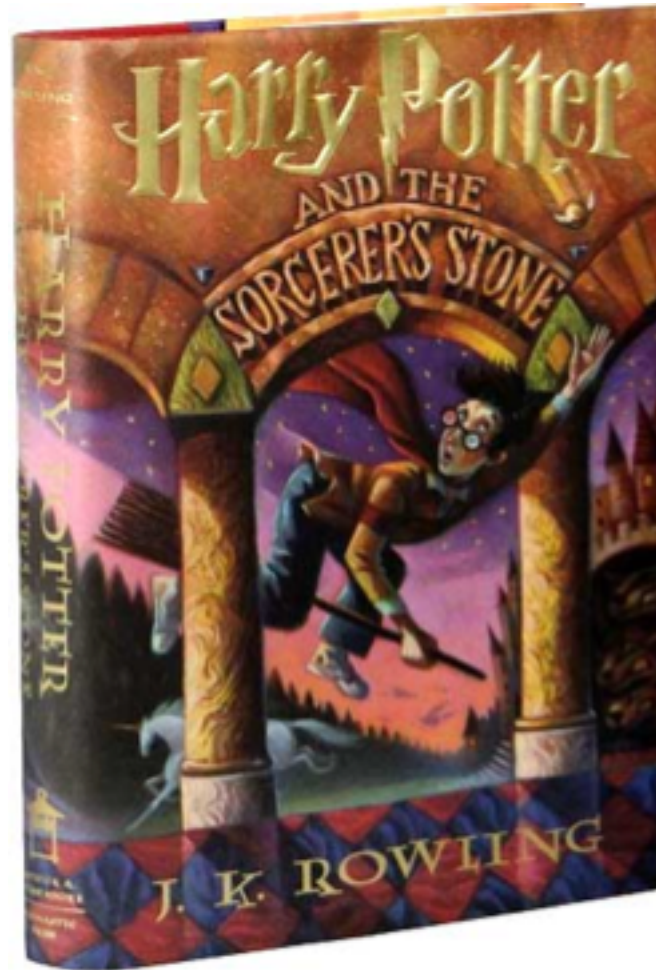
Intellectual Property Law at a glance

FIG. 10

Intellectual Property Law at a glance

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Intellectual Property Law at a glance

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Intellectual Property Law at a glance

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Intellectual Property Law at a glance

	Function/ Subject matter	Protection requirements	Registration	Duration	Scope of protection
Copyright	Protecting Work	Originality, Expression	No	Life of the author + 70 years	Exploitation when copying
Patent	Protecting Invention	Novelty, Inventive Step, Industrial Applicability	Yes	20 years	Exploitation even without copying
Design	Protecting Appearance of a product	Novelty, Individual chararacter	Yes, except unregistered Community design	5 years renewable, max 25 years (reg.); 3 years (unreg.)	Exploitation when copying (unreg.) and even without copying (reg.)
Trademark	Sign guaranteeing consumers the origin of good/service	Distinctiveness, Representation	Yes, except well known mark	10 years renewable indefinitely	Exploitation even without copying when adverse effect on function

Part 2: A closer look at Copyright Law

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A closer look at Copyright Law

- Territoriality

- Subject matter

- Protection requirements

- Ownership

- Infringement requirements

- Rights

- Exceptions and limitations

- Duration

A closer look at Copyright Law

- Territoriality
  - National protection
    - Bergium: art. XI.165 and s. Code de droit économique
  - EU harmonization
    - Directive 2001/29/EC on the harmonization of certain aspects of copyright and related rights in the information society [**InfoSoc Dir.**]
    - Directive 2009/24/EC on the legal protection of computer programs (codified version) [**Software Dir.**]
    - Directive 96/9/EC on the legal protection of databases [**Database Dir.**]
    - …
  - International protection
    - Berne Convention (1886)
    - …

Berne Convention Membership, February 2010
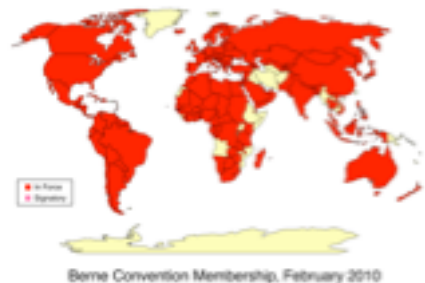
A closer look at Copyright Law

- Subject matter: Work
  - General: Literary, artistic, musical
    - 'The expression "literary and artistic works" shall include every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression, such as (…) [non exhaustive list]' (art. 2(1)Berne Convention)
 - Specific: Software
    - Object/source code
  - Specific: Database
    - Structure

A closer look at Copyright Law

- Protection requirements (1): Expression
  - Perceptible by senses
  - Ideas (facts, principles, systems, etc.) are not protected
  - Appreciation by national courts
 - Dichotomy -> Continuum idea/expression

Unprotected Abstract Idea

'Gray zone' between idea and expression

Protected Concrete expression
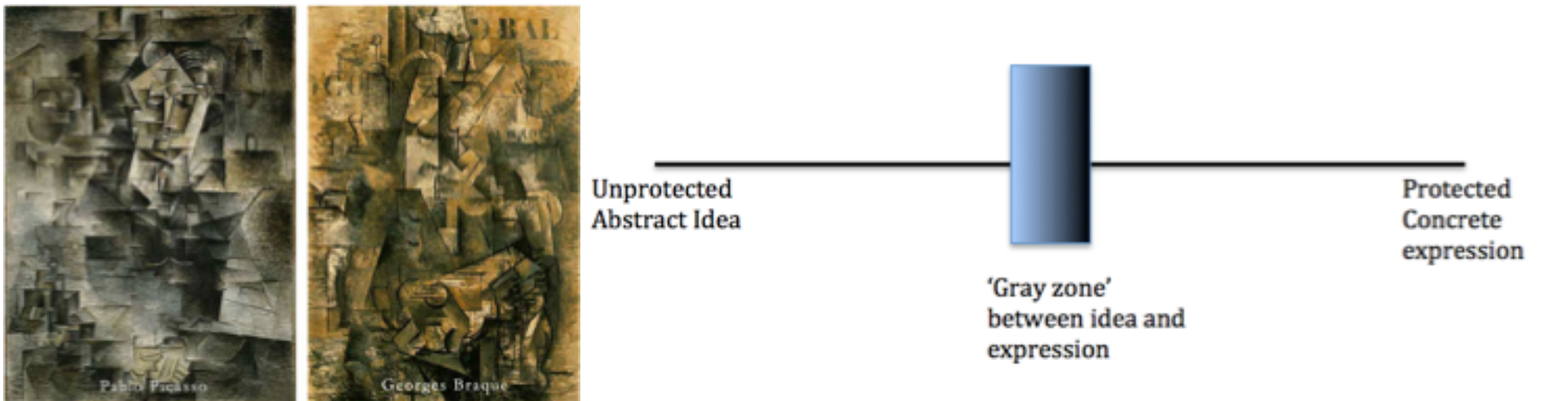
A closer look at Copyright Law

- Protection requirements (2): Originality
  - Harmonization in EU
    - Definition
      - 'Author's own intellectual creation'
    - Criteria
      - 'Personal touch'
      - 'Through the choice, sequence and combination'
      - 'Free and creative choices'
        - Not fulfliled when 'dictated by technical considerations, rules or constraints which leave no room for creative freedom'
    - Case Law CJEU, *see* e.g. *Infopaq*, C-5/08 (2009); Painer, C-145/10 (2011); *Football Dataco*, C-604/10 (2012)
  - Not novelty
  - Low treshold
  - Appreciation by national courts

A closer look at Copyright Law
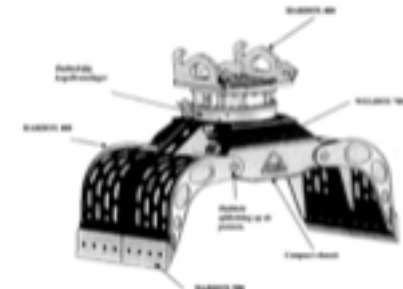
A closer look at Copyright Law

- Ownership
  - General rule in EU: author (natural person)
    - Exceptions: legal person
      - Software
      - Database
      - Transfer (contract)

A closer look at Copyright Law

- Infringement requirements (1): Similarities
  - As to original elements
  - Not necesseraly identity
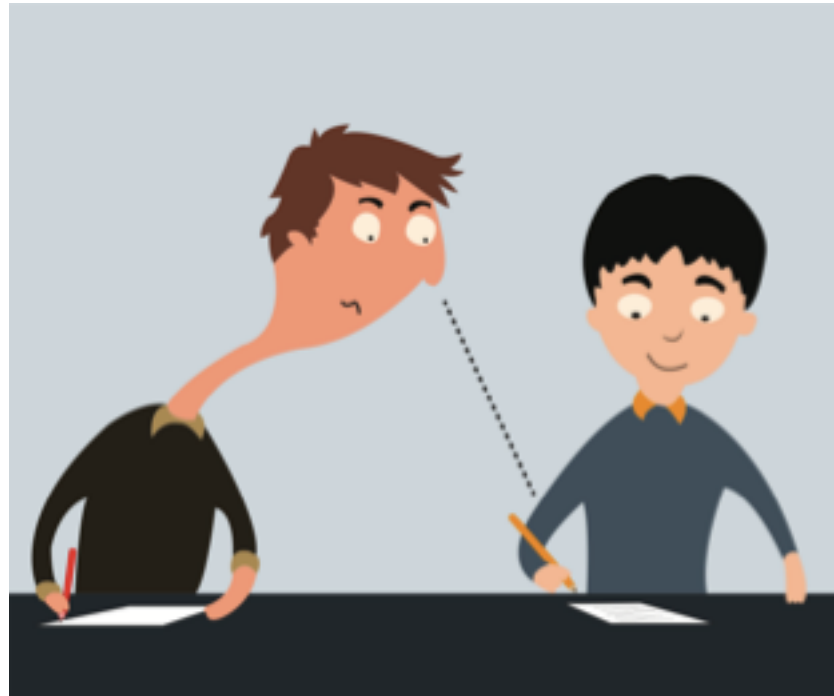 - Appreciation by national courts

Comm. Brussels (cess.), 17 September 2008 (No)
Brussels, 12 April 2011 (Yes)

A closer look at Copyright Law

- Infringement requirements (2): Copying
  - No protection against independent creation
  - Often proven by presumption
 - Appreciation by national courts

A closer look at Copyright Law

- ## Rights (1): Economic
  - Harmonization in EU
    - Reproduction
      - '(...) exclusive right to authorise or prohibit direct or indirect, temporary or permanent reproduction by any means and in any form, in whole or in part: for authors, of their works (...)' (art. 2(a) InfoSoc Dir.)
      - Case law CJEU, *see* e.g. *Infopaq*, C-5/08 (2009)
    - Communication and making available to the public
      - '(...) exclusive right to authorise or prohibit any communication to the public of their works, by wire or wireless means, including the making available to the public of their works in such a way that members of the public may access them from a place and at a time individually chosen by them' (art. 3(1) InfoSoc Dir.)
      - Case law CJEU, *see e.g. Reha Training*, C-117/15 (2016); *Svensson*, C-466/12 (2014)
    - Others: Distribution, Rental, Lending
  - Broad interpretation
  - Can be transfered by contracts

A closer look at Copyright Law

- Rights (2): Moral
  - No harmonization in EU
    - Minimal int'l harmonization (art. *6bis* Berne Convention)
  - Belgium (and most countries):
    - Divulgation
    - Attribution
    - Integrity
  - Cannot be transfered by contracts
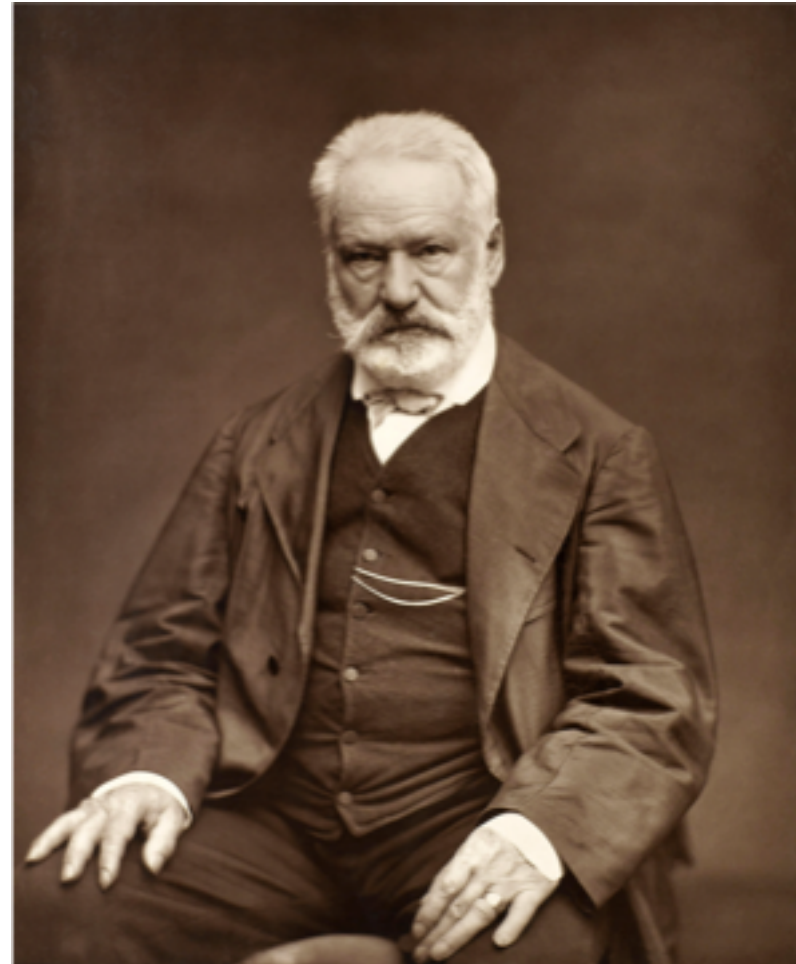
A closer look at Copyright Law

- Exceptions and limitations
  - Harmonization in EU
    - Exhaustive list of exceptions to reproduction and/or communication to the public right (article 5 InfoSoc Dir.)
    - Optional, except for transient copy (mandatory)
    - Case law CJEU, *see* e.g. *Infopaq*, C-5/08 (2009); *Deckmyn*, C-201/13 (2014)
  - Strict interpretation
  - Examples
    - Private copying
    - Quotation
    - Parody
    - …

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A closer look at Copyright Law

- Duration
  - General rule EU: life of the author + 70 years

HOW LONG?
Copyright Duration in the 21st Century

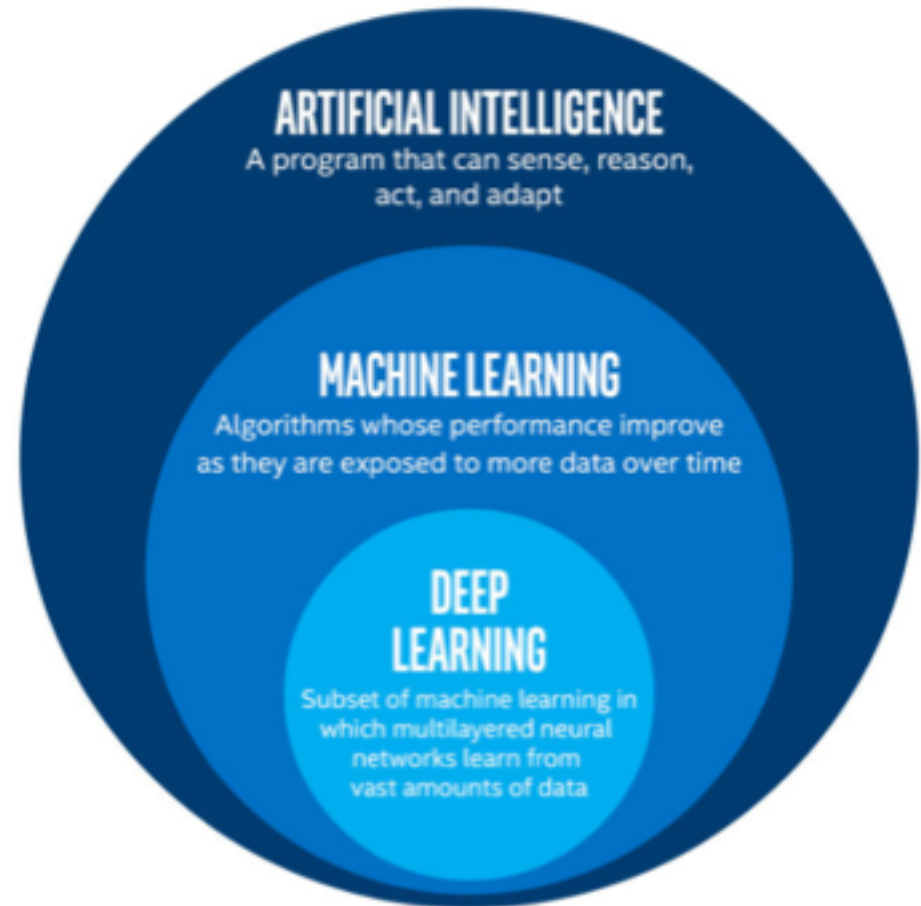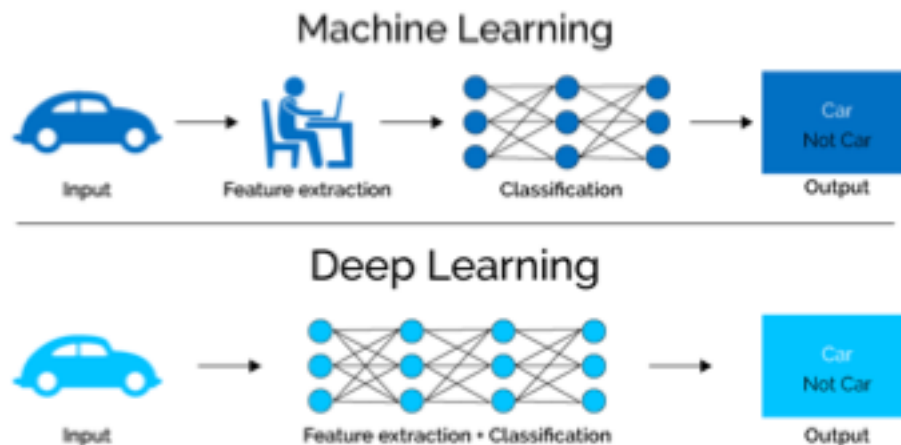# Part 3: Artificial Intelligence, in the blink of an eye

Artificial Intelligence, in the blink of an eye

- **AI = any program that can**
  - **Sense** = Identify and recognize meaningful objects or concepts in the midst of vast data. Is that a stoplight? Is it a tumor or normal tissue?
  - **Reason** = Understand the larger context, and make a plan to achieve a goal. If the goal is to avoid a collision, the car must calculate the likelihood of a crash based on vehicle behaviors, proximity, speed, and road conditions.
  - **Act** = Either recommend or directly initiate the best course of action. Based on vehicle and traffic analysis, it may brake, accelerate, or prepare safety mechanisms.
  - **Adapt** = We must be able to adapt algorithms at each phase based on experience, retraining them to be ever more intelligent. Autonomous vehicle algorithms should be re-trained to recognize more blind spots, factor new variables into the context, and adjust actions based on previous incidents.

Source: Singh Niven, *How to get started as a Developer in AI*, https://software.intel.com/en-us/articles/how-to-get-started-as-a-developer-in-ai
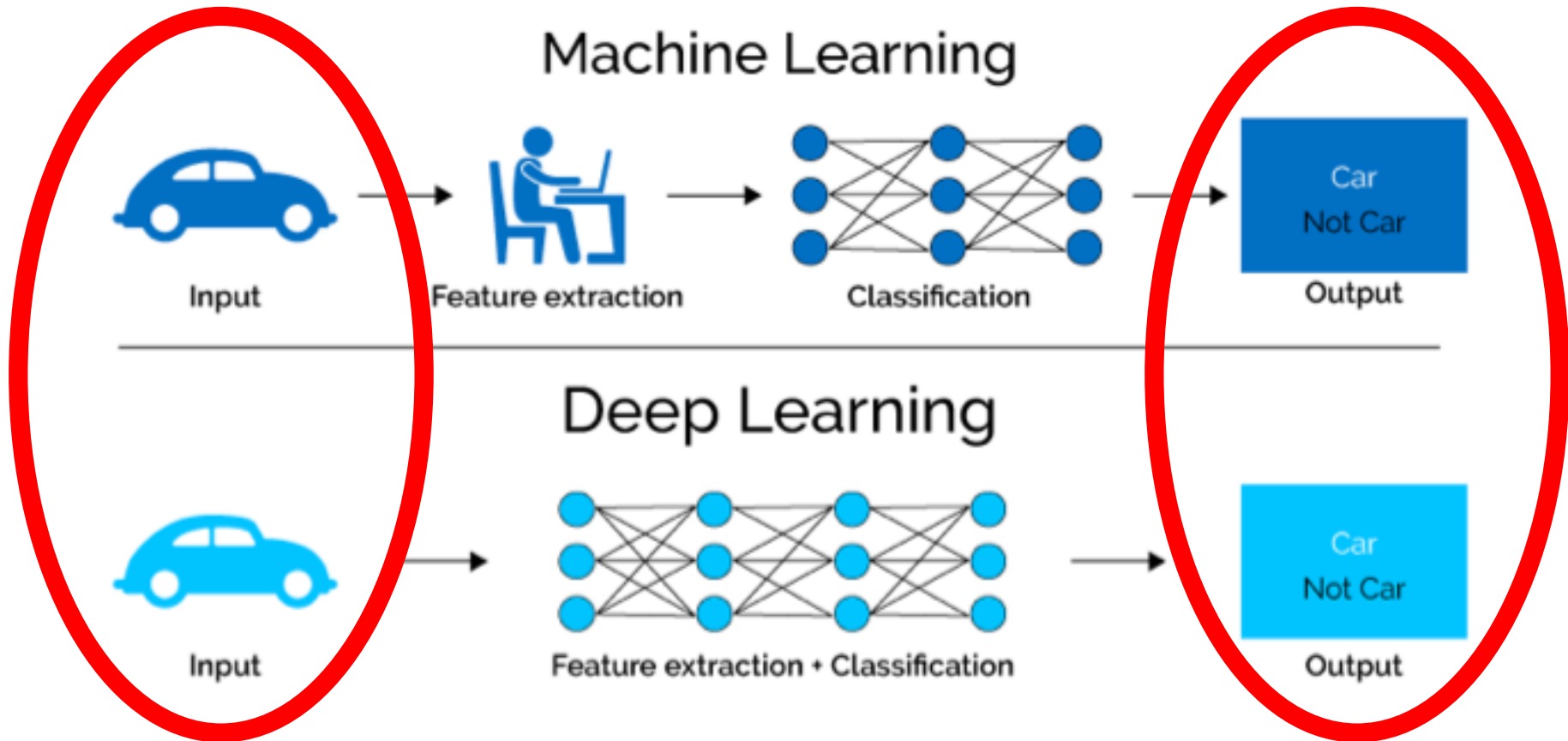
Artificial Intelligence, in the blink of an eye

- AI as an umbrella term that includes machine learning and deep learning (as a subset of the latter)

Artificial Intelligence, in the blink of an eye

Artificial Intelligence, in the blink of an eye

Deep Learning Opportunities
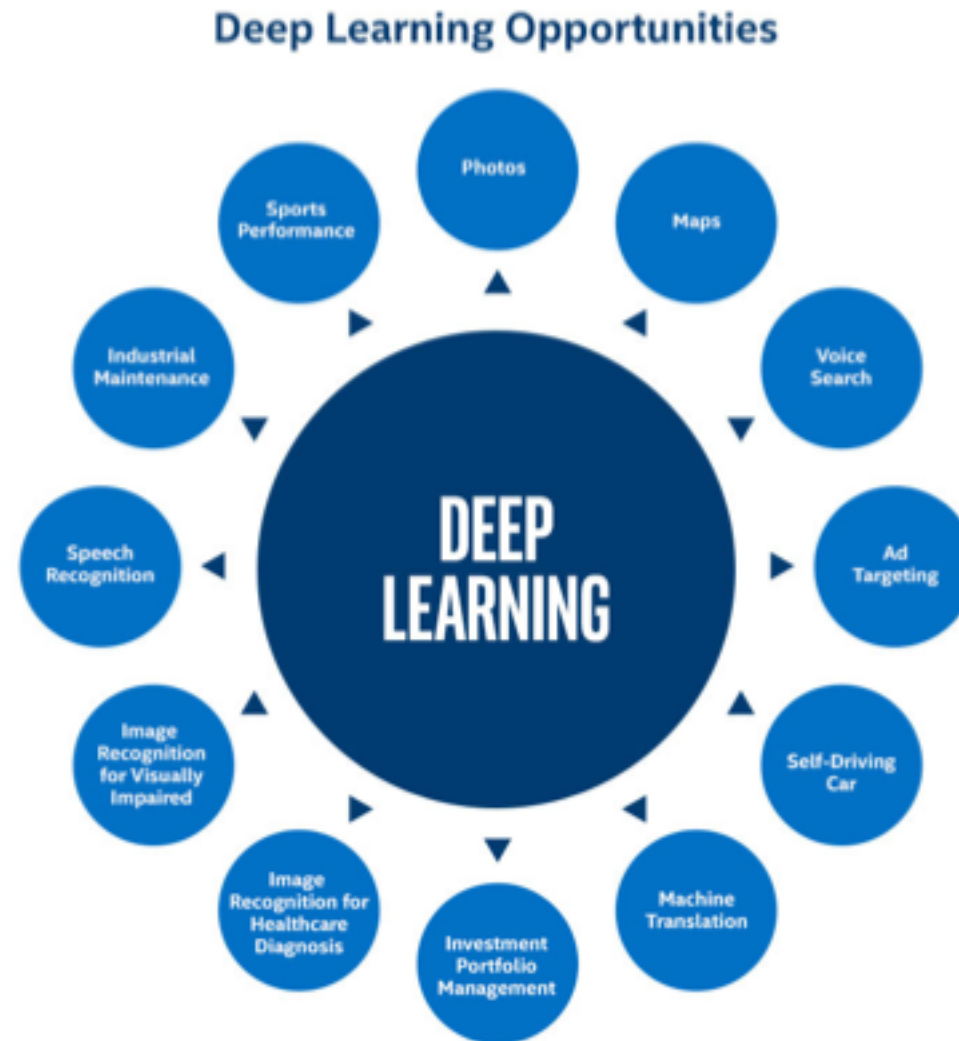
Artificial Intelligence, in the blink of an eye

Source: https://www.cbinsights.com/research/artificial-intelligence-top-startups/
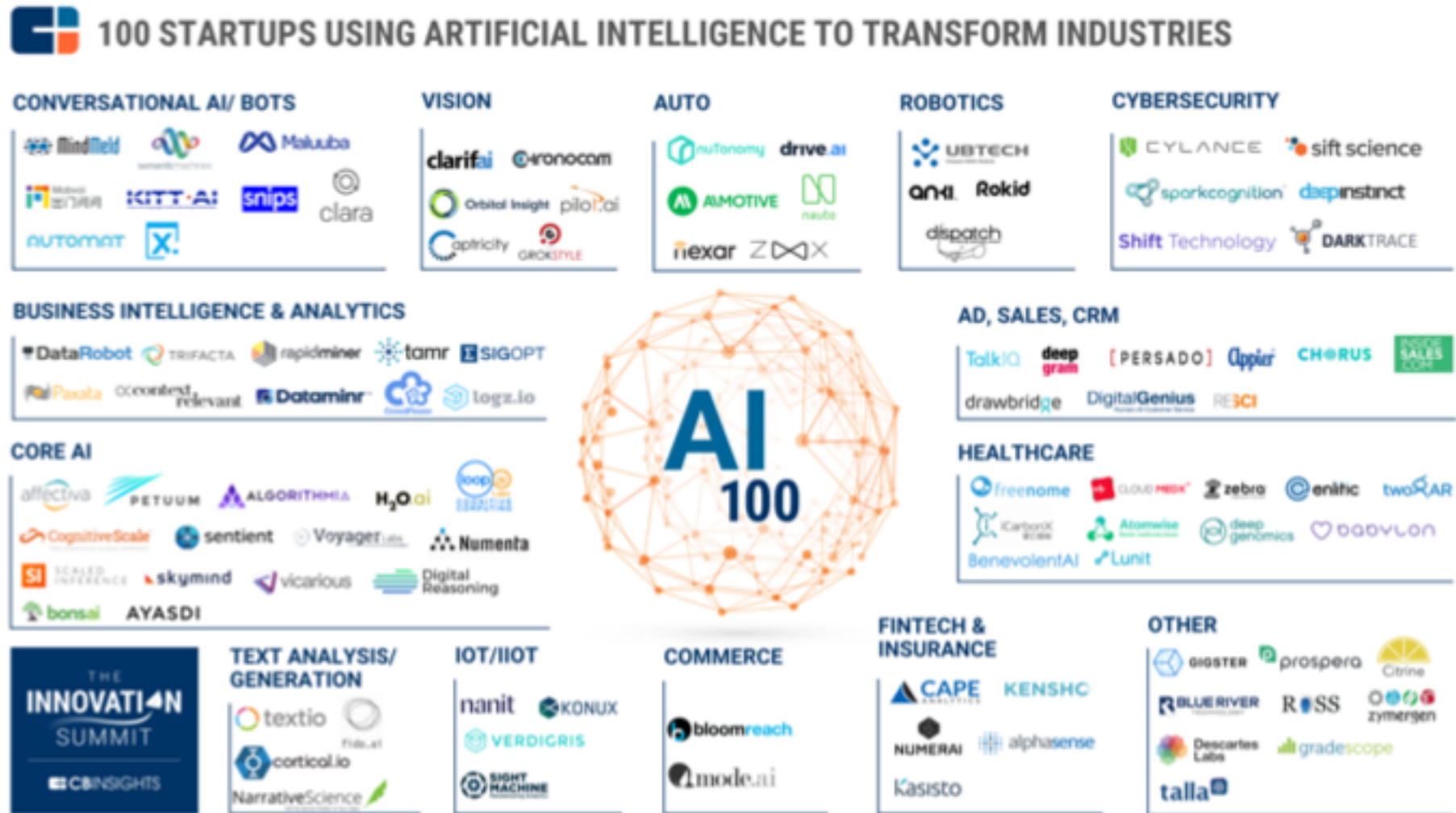
Artificial Intelligence, in the blink of an eye

INPUT ⇨ ⇨ **OUTPUT**

- 2 selected questions:
    - What if INPUT = Copyrighted works?
    - Could OUTPUT = Copyrighted works?

Part 4: Focus on the inputs

Is feeding the machine infringing copyright law?

Is feeding the machine infringing copyright law?

Copyrighed Works

- 2 selected questions:
  - (1) Is there any reproduction occuring?
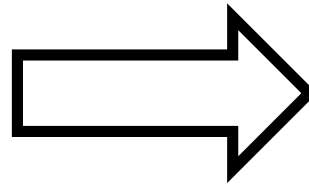 - (2) If so, is there any justification?

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Is feeding the machine infringing copyright law?

- (1) Is there any reproduction occuring?
    - Art. 2(a) InfoSoc Dir.: '(...) exclusive right to authorise or prohibit direct or indirect, temporary or permanent reproduction by any means and in any form, in whole or in part: for authors, of their works (...)'
    - CJEU, *Infopaq*, C-5/08 (2009)

Is feeding the machine infringing copyright law?

- (1) Is there any reproduction occuring?
  - CJEU, *Infopaq*, C-5/08 (2009)
    - Facts
      - Infopaq runs a media monitoring and analysis business
      - Principal activity is drawing up summaries of selected articles from Danish daily newspapers and other periodicals, selected on the basis of certain subject criteria agreed with customers
      - Selection is made by means of a 'data capture process'
      - DDF (association of publishers) sues for copyright infringement

Is feeding the machine infringing copyright law?

- (1) Is there any reproduction occuring?
    - CJEU, *Infopaq*, C-5/08 (2009)
        - Data capture process
            - <mark>1) Selection of relevant publications</mark>
            - <mark>2) Scaning and creation of TIFF file (image file)</mark>
            - <mark>3) Translation of TIFF file by OCR server into data readable by text processing program (text file)</mark>
                - At the end of this stage, deletion of image file
            - <mark>4) Text file processed to find search word and generation of result data for each match, the result data comprising (among others) 5 prior words / search word / 5 following words</mark>
                - At the end of this stage, deletion of text file
            - <mark>5) Printing out result data</mark>

Is feeding the machine infringing copyright law?

- (1) Is there any reproduction occuring?
  - CJEU, *Infopaq*, C-5/08 (2009)
    - Decision

      « **An act occurring during a data capture process, which consists of storing an extract of a protected work comprising 11 words** and printing out that extract, is such as to **come within the concept of reproduction in part** within the meaning of Article 2 of Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society, **if the elements thus reproduced are the expression of the intellectual creation of their author**; it is for the national court to make this determination »

Is feeding the machine infringing copyright law?

- (2) If so (reproduction), is there any justification?
  - Copyright ownership
  - If not,
    - Copyright Licence (but transaction costs and fees)
    - **Exception**

Is feeding the machine infringing copyright law?

- (2) If so (reproduction), is there any justification?
    - **Private use exception** for AI business?
        - '(…) reproductions on any medium made by a **natural person** for **private use** and for ends that are **neither directly nor indirectly commercial** (…)' (art. 5(2)(b) InfoSoc Dir.)
    - $\Rightarrow$ **NO**

Is feeding the machine infringing copyright law?

- (2) If so (reproduction), is there any justification?
  - **Research exception** for AI business?
    - '(…) use for the **sole purpose** of illustration for teaching or **scientific research**, as long as the source, including the author's name, is indicated, unless this turns out to be impossible and to the extent justified by the **non-commercial purpose** to be achieved (…)' (art. 5(3)(a) InfoSoc Dir.)
  - $\Rightarrow$ **NO**

Is feeding the machine infringing copyright law?

- **(2) If so (reproduction), is there any justification?**
  - **Exception for transient copies** for AI business?
    - Art. 5(1) InfoSoc. Dir.): '**Temporary** acts of reproduction referred to in Article 2, which are **transient or incidental** [and] an **integral and essential part of a technological process** and whose sole purpose is to enable:
      (a) **a transmission in a network between third parties by an intermediary**, or
      (b) **a lawful use**
      of a work or other subject-matter to be made, and which have **no independent economic significance**, shall be exempted from the reproduction right provided for in Article 2'
      - = 5 cumulative conditions (CJUE, *Infopaq*, C-5/08 (2009))
    - 'In accordance with its objective, **that exception must allow and ensure the development and operation of new technologies** and safeguard a fair balance between the rights and interests of right holders, on the one hand, and of users of protected works who wish to avail themselves of those new technologies, on the other' (CJUE, *Football Association Premier League*, C-403/08 and C-429/08 (2011))

Is feeding the machine infringing copyright law?

- **(2) If so (reproduction), is there any justification?**
  - **Exception for transient copies** for AI business?
    - '(…) those acts must not have independent economic significance, in that the **economic advantage** derived from their implementation **must not be either distinct or separable from the economic advantage derived from the lawful use of the work concerned** and it **must not generate an additional economic advantage going beyond that derived from that use of the protected work**. (…)

      an advantage derived from an act of temporary reproduction is distinct and separable if the author of that act is likely to make a **profit due to the economic exploitation of the temporary reproductions themselves**.

      The same is true if the acts of temporary reproduction lead to a **change in the subject matter reproduced**, as it exists when the technological process concerned is initiated, because those acts no longer aim to facilitate its use, but the use of a different subject matter (…)' (CJUE, *Infopaq (II)*, C-302/10 (2012)
  - ⇒ **PROBABLY NO**

Is feeding the machine infringing copyright law?

- (2) If so (reproduction), is there any justification?
    - **Exception for Text and Data Mining** for AI business?
        - Directive Proposal on Copyright in the Digital Single Market (COM(2016) 593)
            - Art. 2(2): ''**text and data mining**' means any **automated analytical technique aiming to analyse text and data in digital form in order to generate information such as patterns, trends and correlations**'
            - Art. 3(1): 'Member States shall provide for an **exception** to the rights provided for in Article 2 of Directive 2001/29/EC, Articles 5(a) and 7(1) of Directive 96/9/EC and Article 11(1) of this Directive **for reproductions and extractions made by research organisations** in order to carry out text and data mining of works or other subject matter to which they have lawful access for the purposes of scientific research'

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Is feeding the machine infringing copyright law?

- (2) If so (reproduction), is there any justification?
  - **Exception for Text and Data Mining** for AI business?
    - Not as drafted in the proposal
    - Eventually other drafting, ongoing discussions
      - 'Without prejudice to Article 3 of this Directive, Member States may provide for an **exception** or a limitation to the rights provided for in Article 2 of Directive 2001/29/EC, Articles 5(a) and 7(1) of Directive 96/9/EC and Article 11(1) of this Directive **for reproductions and extractions of lawfully accessible works and other subject-matter that form a part of the process of text and data mining**, provided that the use of works and other subject matter referred to therein has not been expressly reserved by their rightholders, including by machine readable means' (Amendment 65, Report on the proposal, EU Parliament, 29 June 2018)
        - Parliament rejected decision to enter interinstitutional negotiations (5 July 2018), vote on the law (12 september 2018)
    - $\Rightarrow$ **LIMITED SCOPE (and not actual law)**

Part 5: Focus on the outputs

Are AI productions eligible for copyright protection?

Are AI productions eligible for copyright protection?
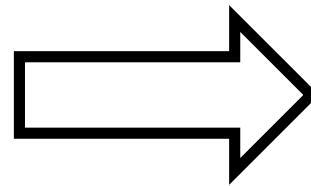
Copyrighed Works?

Are AI productions eligible for copyright protection?

Taryn Southern, « Break Free », *I Am AI*
https://www.youtube.com/watch?v=XUs6CznN8pw

The Next Rembrandt
https://www.youtube.com/watch?v=luygOYZ1Ngo

Are AI productions eligible for copyright protection?

- **Distinction to be made**
  - AI generated production (AIGP): production is sole output of AI and entirely in the dependency of inputs
  - AI assisted production (AIAP): production is not sole output of AI and/or not entirely in the dependency of inputs

- **Three main arguments**
  - (1) Author as a human being?
  - (2) Originality criteria?
  - (3) Rationales for copyright protection?

Are AI productions eligible for copyright protection?

- **(1) Author as a human being**
  - EU law
    - 'Author's own intellectual creation'
    - 'Personal touch'
  - Comparative law
    - Author is 'a human being who exercises subjective judgment in composing the work and who controls the execution' (Ginsburg, 2002-2003)
    - Section 313.2 Compendium of US Copyright Office practices
      - 'To qualify as a work of « authorship » a work must be created by a human being'
      - '(…) the Office will not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author'
  - $\Rightarrow$ AIGP without human intervention
  - $\Rightarrow$ AIAP with human intervention

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Are AI productions eligible for copyright protection?

- **(2) Originality criteria**
  - EU law
    - 'Choice'
    - 'Free and Creative'
      - Not fulfliled when 'dictated by technical considerations, rules or constraints which leave no room for creative freedom'
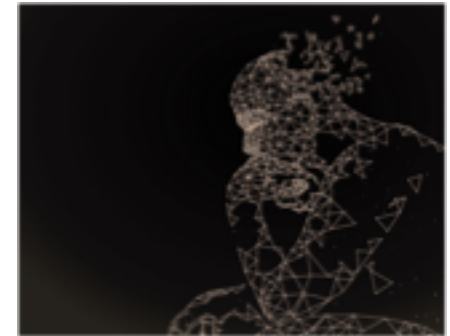 - $\Rightarrow$ AIGP entirely in the dependency of inputs
  - $\Rightarrow$ AIAP not entirely in the dependency of inputs

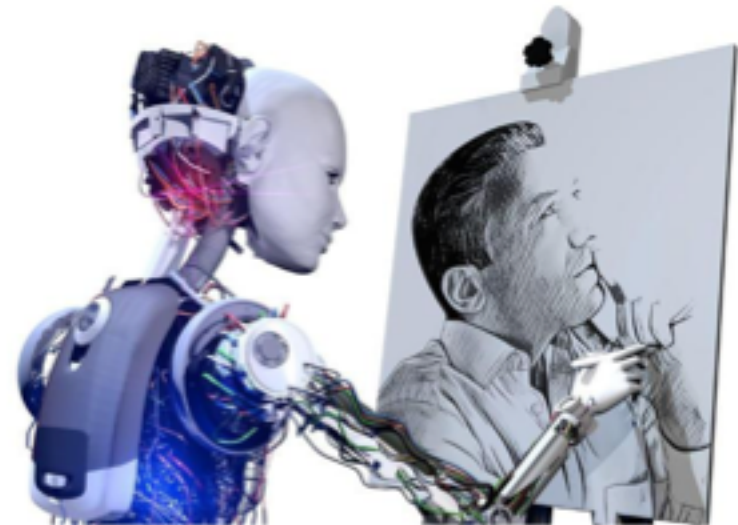# Are AI productions eligible for copyright protection?

- (3) Rationales for protection
  - Copyright
    - Natural rights theory
      - Protection of the personality of the author
      - Protection of the labor of the author
    - Utiliatarian theory
      - Protection as an incentive to create in order to promote public utility
  - Neighbouring right, *sui generis* database right
    - Investment theory
      - Protection as an incentive to invest
  - ⇒ Protection based on copyright rationales will not foster AIGP (but eventually investment theory, for other than copyright)
  - ⇒ No protection of AIAP runs counter copyright rationales

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Are AI productions eligible for copyright protection?

- As a matter of principle…
  - AI generated production (production is sole output of AI and entirely in the dependency of inputs)
    - Should be excluded from copyright protection
  - AI assisted production (production is not sole output of AI and/or not entirely in the dependency of inputs)
    - Should not be excluded from copyright protection

- … but question is open

Are AI productions eligible for copyright protection?

- ## Future EU law?
    - EU Parliament, Resolution with recommendations to the Commission on Civil Law Rules on Robotics, 16 February 2017 (2015/2013(INL))
        - '59. Calls on the Commission (…) to consider (…) f) creating a **specific legal status for robots** in the long run, so that at least the most sophisticated autonomous robots could be established as having **the status of electronic persons** responsible for making good any damage they may cause, and possibly applying electronic personality to cases where robots make autonomous decisions or otherwise interact with third parties independently'
    - EU Parliament, Explanatory Statement
        - '(…) the elaboration of criteria for "**own intellectual creation**" for copyrightable **works produced by computers or robots** is demanded (…)'
            - Not in final Resolution
    - ⇒ Communication *Artificial Intelligence for Europe* from EU Commission is silent

Conclusion

Conclusion

- **Legal uncertainty as to copyright law**
- **Current EU copyright law not AI friendly**
- **Copyright legal aspects, among many others**
- **Future development of EU law**

Thank you for your attention!

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