

**HUMAN RIGHTS,  
DEMOCRACY  
AND THE RULE OF LAW**

**COUNCIL OF EUROPE**



**CONSEIL DE L'EUROPE**

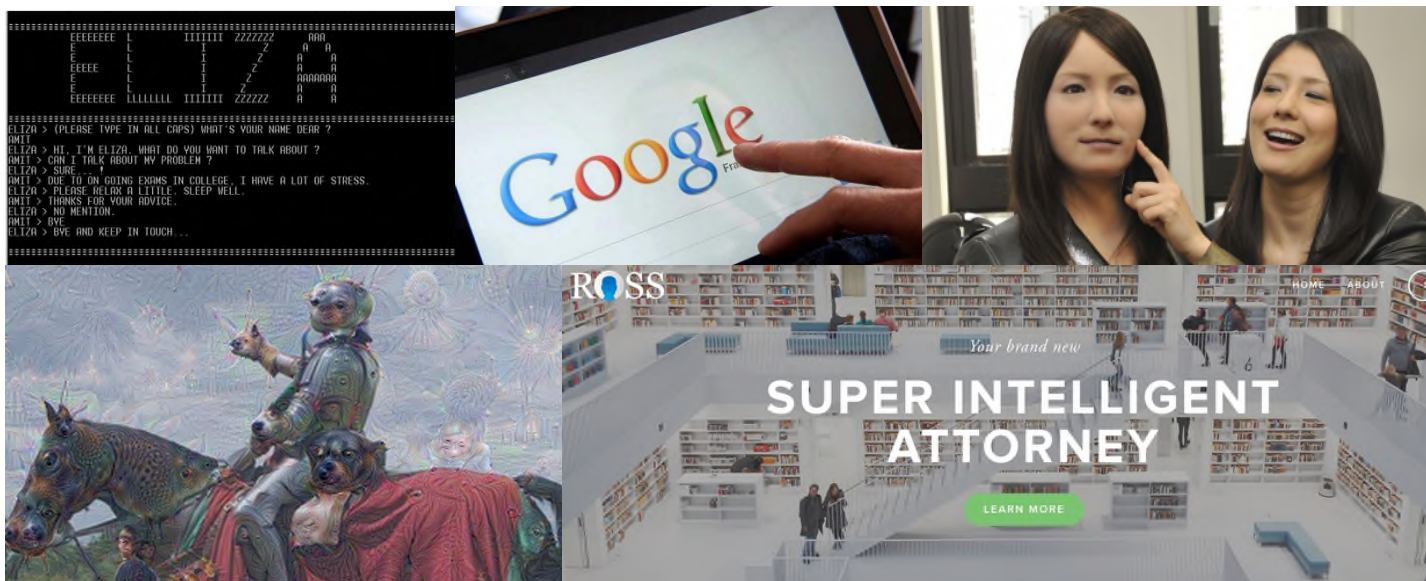
**DROITS DE L'HOMME,  
DÉMOCRATIE  
ET ÉTAT DE DROIT**



# Artificial intelligence and judicial systems: The so-called predictive justice

# Context

The use of so-called artificielle intelligence received renewed interest over the past years.....



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Commission  
for the Efficiency  
of Justice

Commission  
européenne  
pour l'efficacité  
de la justice

# Stakes

**Important changes in all fields of human activity are expected**

**In the judicial field, there is no objective scientific analysis of the solutions being developed and their compatibility with human rights**

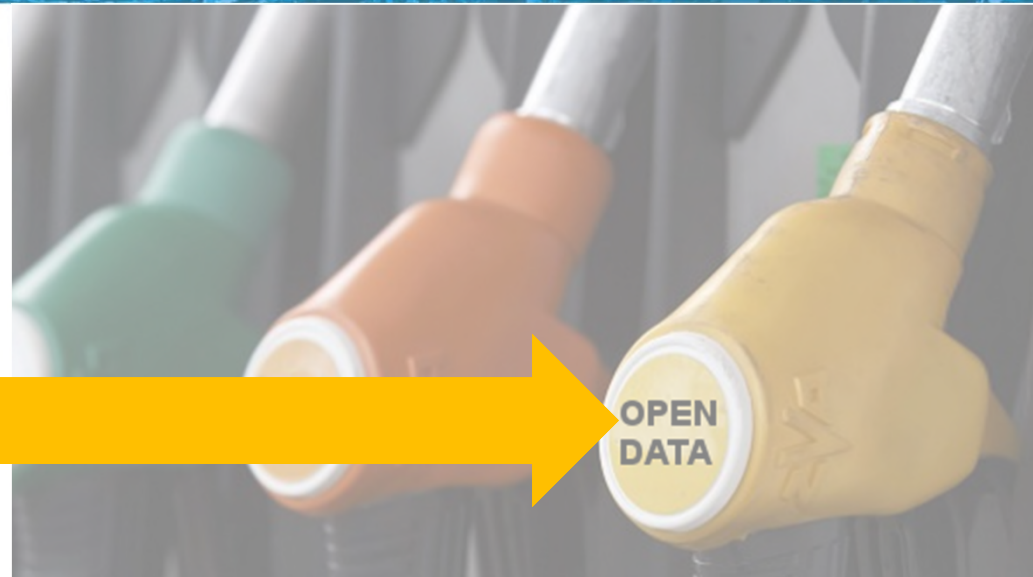
# Questions

- 1. Does artificial intelligence really exist today? What is its fuel?**
- 2. What is predictive justice? What possible applications in the civil and criminal field? What opportunities, what risks?**
- 3. What avenues for the governance of this phenomenon? Regulation, ethical framework?**

# Definitions

## Open Data (narrow sense)

Data (public or private) organised in a base, freely downloadable and re-employable under a no-cost operating license = Free fuel



## Open Data (broad sense)

Treatment and analysis of open data through different techniques (statistics, probabilities, data mining, automatic learning).

# Definitions

## **Big Data (narrow sense) / massive data**

Big set of data which can be subject to a computer process (open data or data employable with a not-for-free operating license, electronic messages, connection traces, GPS signals etc) = The whole fuel pump (with or without free fuel)

## **Big Data (broad sense) or Big Data Analytics**

Advanced means of processing a large volume of data, a large variety with a high speed:

Statistics, probability or mathematics

Data mining (data mining)

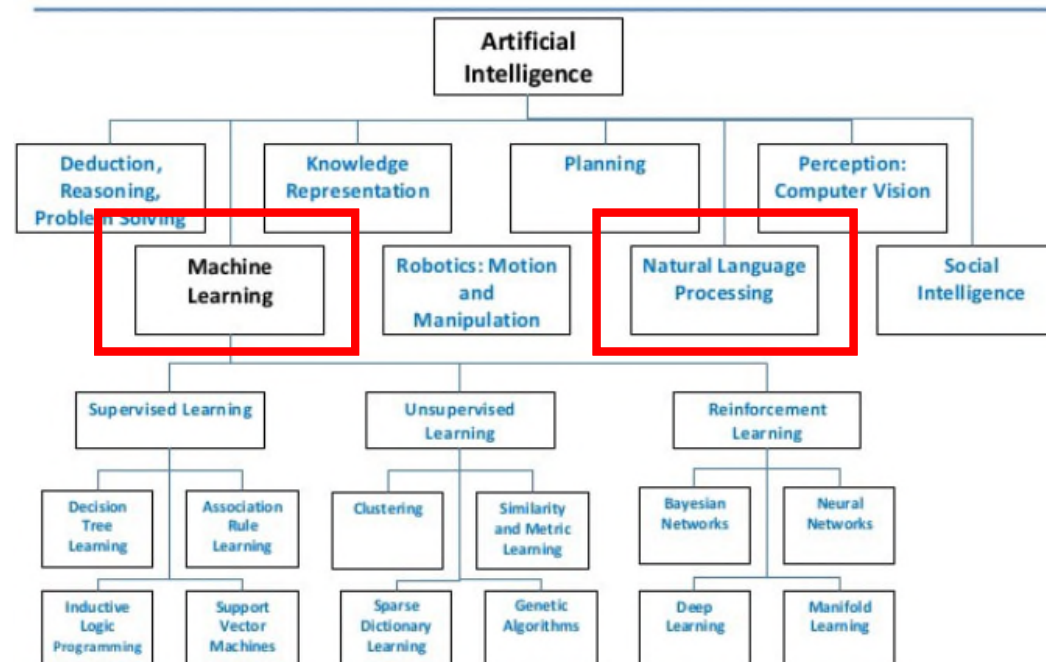
Automatic learning (machine learning), automatic natural language processing

# Definitions

## Intelligence artificielle (IA)

Term contested by specialists who prefer to use the exact name of the technologies actually used: two are particularly used for the processing of judicial decisions

### Artificial Intelligence / Machine Learning Classification



# Definitions

**Intelligence artificielle (IA) : two technologies used in particular for processing case law**

**Natural Language Processing:** IT processing of human language

**Machine Learning** (or automatic learning)

Algorithm of automatic learning (supervised or not by a human) aiming to create links among different data (correlations, categorisation)

# Definitions

## Example of Machine Learning (supervised)

1. A human being collects categorised data: what is the impact of storks on divorces ?

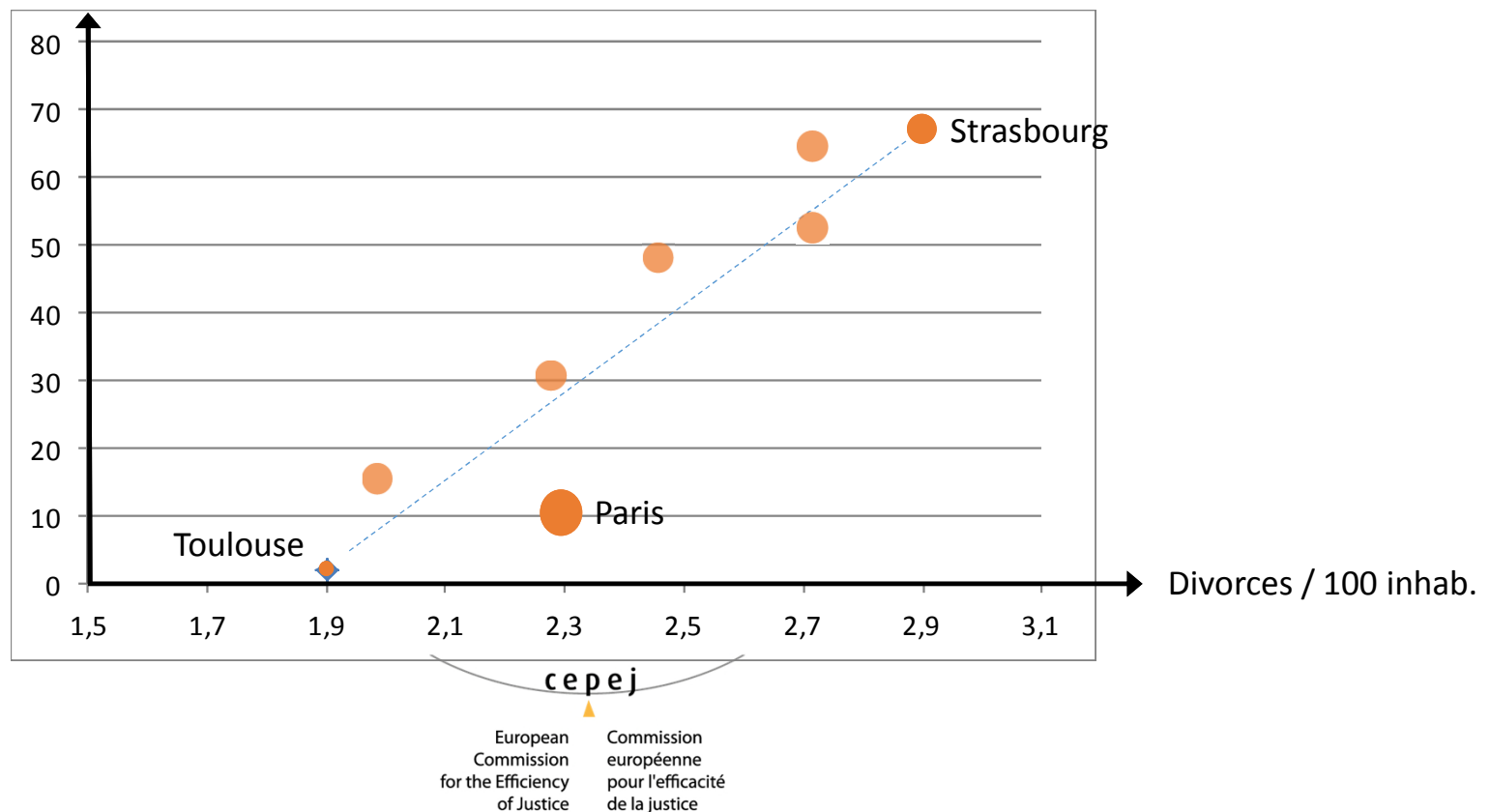
Year	City	Divorces / 100 inhabitants	Storks' number / inhabitant	Median amount of compensation	Children's custody
2001	Strasbourg	2,9	67	1 000 €	Mother
2001	Toulouse	1,9	2	800 €	Mother
2005	Paris	2,3	1	1 200 €	Father
...					

# Definitions

## Example of Machine Learning (supervised)

### 2. The machine creates a model with/showing links (linear regression)

Storks / inhab.



# Definitions

## Example de Machine Learning (supervised)

### 3. From elaborated models...

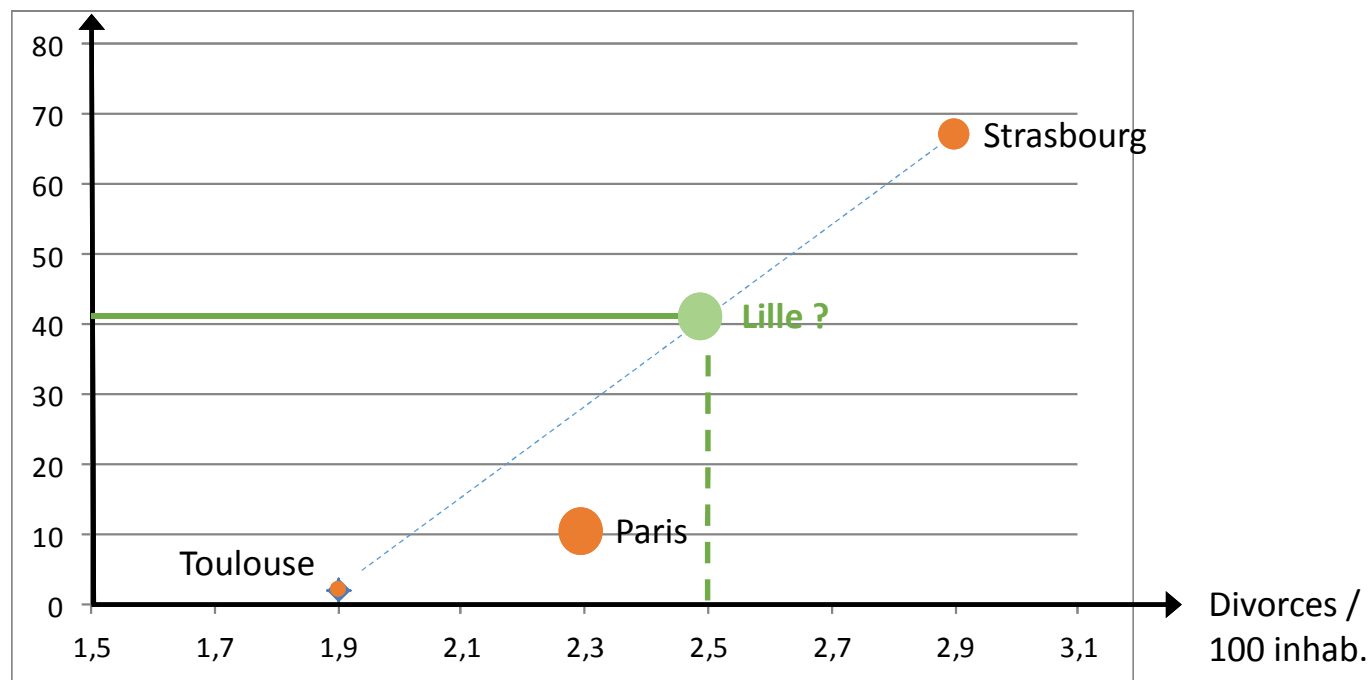
Storks / inhab.

#### Attempts to find cause-effect links

The more there are storks  
The more there are divorces

#### Attempts to predict

I know that in Lille, there are  
41 storks by inhabitant,  
I deduce there can be  
about 2,5 divorces / inhab



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# Definitions

## Example of Machine Learning (not supervised)

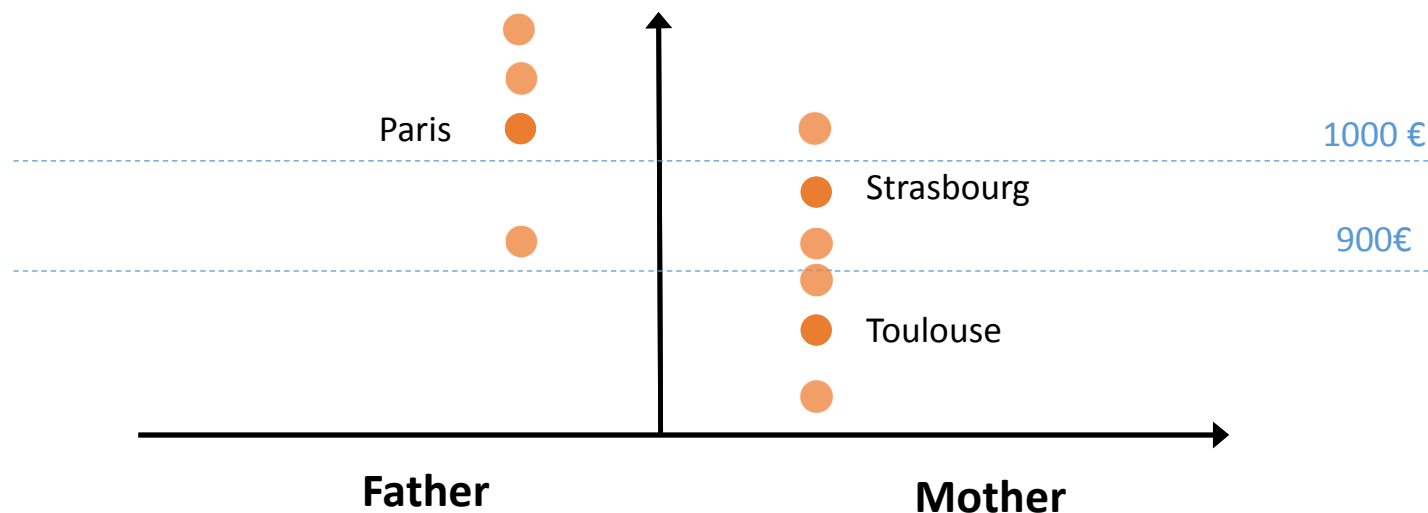
### 1. A human being collects data without making notes

2001	Strasbourg	2,9	67	1 000 €	Mother
2001	Toulouse	1,9	2	800 €	Mother
2005	Paris	2,3	1	1 200 €	Father
...					

# Definitions

## Example of Machine Learning (not supervised)

2. La machine creates alone a model **with/showing** links (categorisation)



# Definitions

## Example of Machine Learning (not supervised)

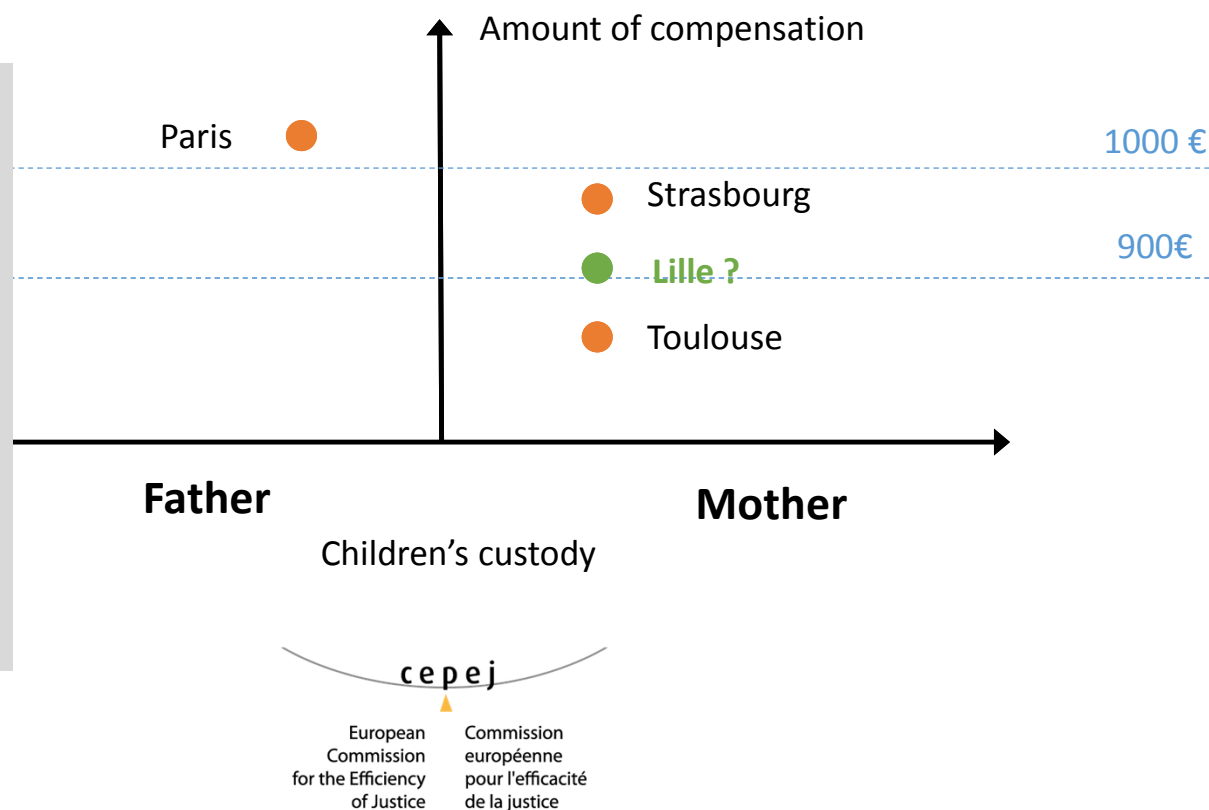
### 3. From elaborated models...

#### Attempts to find cause-effect links

If one lives in Paris, child's Custody will go to the father

#### Attempts to predict

I live in Lille, hence the compensation amount will be less than 1000 € and custody will go to the mother



# Definitions

## A « predictive » justice?

**Predictive** : Word coming from hard sciences, which describes methods allowing to anticipate a situation

*Prae* (before) / *Dictare* (say) : Say before something happens

*Prae* (before) / *Visere* (see) : See before something happens, based on visible findings (empirical and measurables)

**In a narrow sense, building anticipation tools relates more to forecasting than predicting**

# Application

## « Predictive » justice?

Software anticipating a judicial decisions based on the analysis of a large quantity of case law

Comment fonctionne le logiciel :  
exemple avec un cas concret

1 Un juge doit statuer dans une affaire de licenciement pour faute grave à la suite d'insultes proférées par un salarié ivre contre son supérieur hiérarchique.

2 Le magistrat entre dans le moteur de recherche du logiciel les principaux critères du procès.

**Justice prédictive**

**Affaire M. Martin/Entreprise Besogne**

☒ 1<sup>er</sup> degré

- ☒ Conseil de prud'hommes
- ☐ Tribunal de commerce
- ☐ Tribunal d'instance
- ☐ Tribunal de grande instance

☒ Ville

- ☒ Paris
- ☐ Marseille
- ☐ Lyon
- ☐ Bordeaux

☒ Litige

- ☒ Licenciement pour faute grave
- ☐ Assiduité au travail
- ☐ Absences injustifiées
- ☒ Etat d'ivresse
- ☐ Harcèlement
- ☒ Insultes envers la hiérarchie
- ☐ Vol en entreprise

☒ Jurisprudence

21	mai	1985
22	avril	1986
23	mai	1987
24	juin	1988
25	juillet	1989

Annuler Valider

# Application

## « Predictive » justice?

Software anticipating a judicial decisions based on the analysis of a large quantity of case law



### Le logiciel :

- Utilise des millions de décisions de justice anonymisées
- N'est pas utilisé en droit pénal

**3 Le logiciel analyse la jurisprudence** en quelques secondes et fournit au juge le résultat des précédents procès similaires (plus les indemnités et dommages-intérêts le cas échéant).



**4 La décision finale reste à la discrétion du magistrat.**

# Study

## **Study of the University College of London based on 584 decisions of the ECtHR : 79% of decisions anticipated**

### AI predicts outcomes of human rights trials

24 October 2016

The judicial decisions of the European Court of Human Rights (ECtHR) have been predicted to 79% accuracy using an artificial intelligence (AI) method developed by researchers at UCL, the University of Sheffield and the University of Pennsylvania.



The method is the first to predict the outcomes of a major international court by automatically analysing case text using a machine learning algorithm. The study behind it was published today in *PeerJ Computer Science*.

# Study

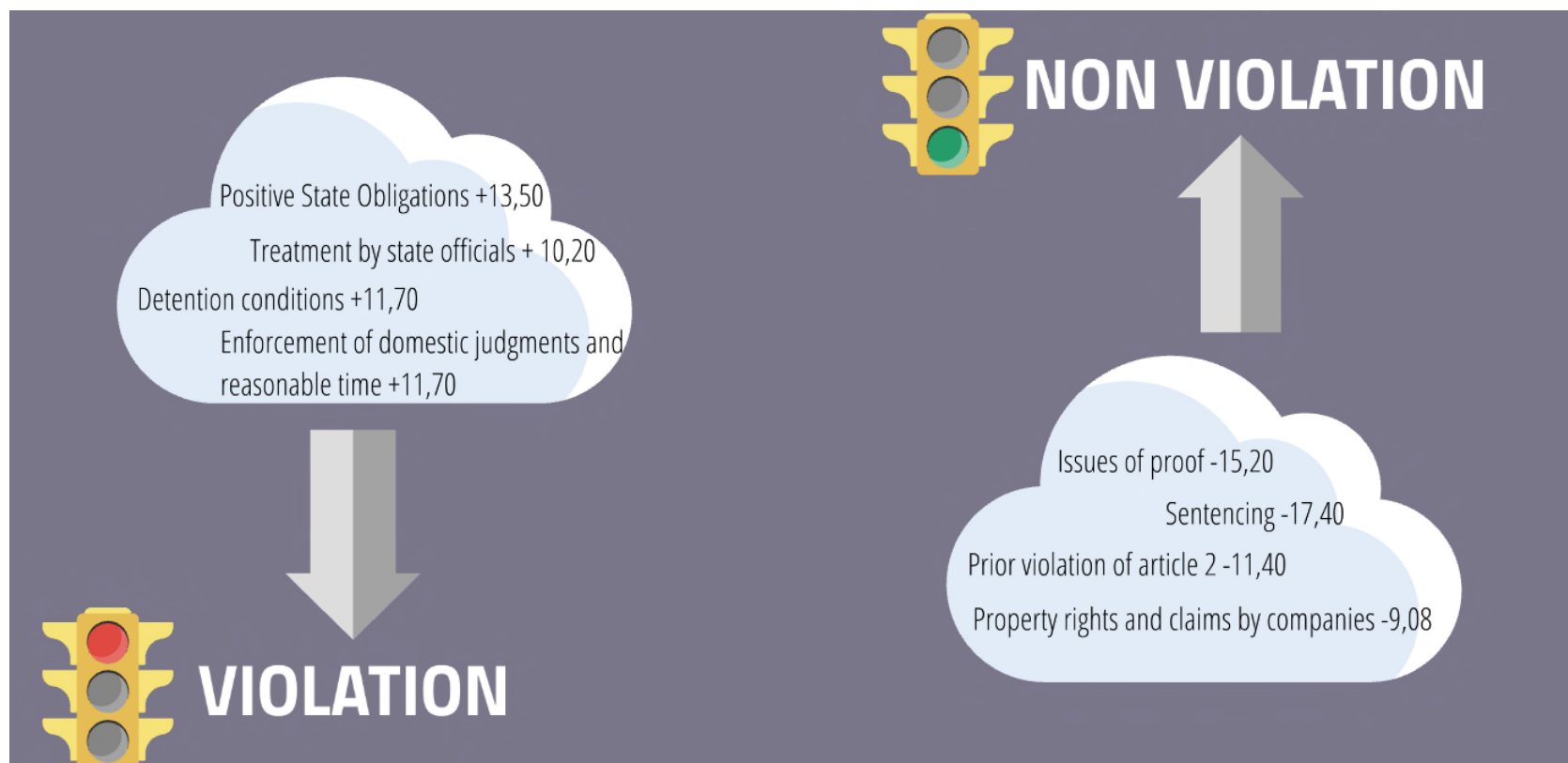
## **A machine that operates a probabilistic treatment of lexical groups**

The joint processing of automatic natural language processing and automatic learning enabled the machine to identify lexical groups and classify them according to their frequency in violation or non-violation decisions

## **A machine that gets better prediction results on the "facts" part**

The success rate of replication of the result is 79% on the "facts" part and drops to 62% on the application part of the Convention

# Study



# Findings

## **A machine that does not reproduce legal reasoning**

It is a statistical or probabilistic approach, without understanding of legal reasoning

## **A machine that does not explain the meaning of the law or the behaviour of judges**

Impossibility of mechanically identifying all the causative factors of a decision and risks of confusing correlation and causality

# Constat

## An imperfect raw material

### What is a justice decision ?

- Selection of relevant facts by the judge in a raw account
- Application of standards that are rational but do not fit together in a perfectly coherent manner ("open texture of law")
- Formalization of reasoning in the form of a syllogism, which is more of an *a posteriori* narrative that does not strictly isolate all the causative factors of a decision (sometimes summary motivation)

# Tests

## Tests of several months in the Appeal courts of Douai and Rennes

Judges concluded for the absence of « added value » for their activity

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LANCÔME  
JE ME L'OFFRE

### La justice prédictive : de la révolution à la désillusion

Publié le vendredi 13 octobre 2017 à 6h00 par Charlotte Piret @ChPiret, Hajera Mohammad

Plusieurs tribunaux testent depuis quelques mois, un logiciel qui pourrait permettre à l'avenir de prédire une décision judiciaire. Mais les premiers retours sont mitigés.



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# IA applications

**Civil / commercial / administrative field**

## **Valorisation of case law**

Research engines making links among doctrine, case law, laws and regulations

## **Compensation scales, support to on-line dispute resolution**

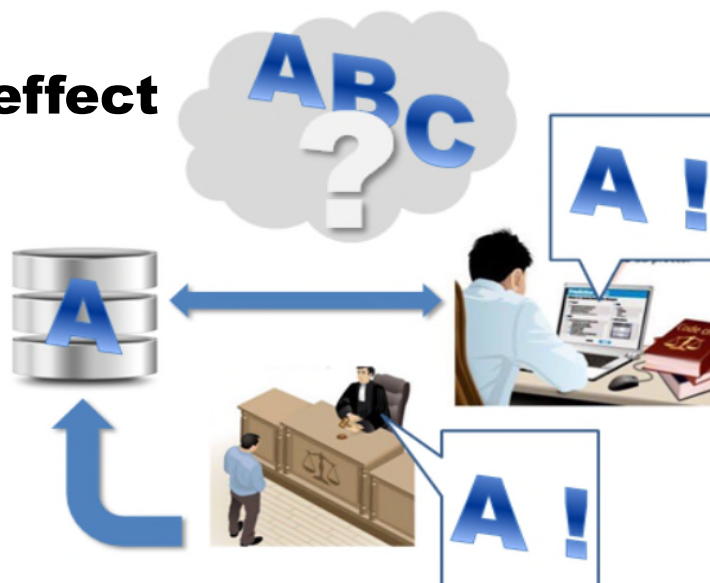
Provided that data are of good quality, that certified and loyal algorithms are used and that access to a judge is always possible, for an adversarial debate

# Points of attention: civil, administrative, commercial matters

**Will the statistical average of decisions become a norm ?  
Which place for the law provision that a judge is supposed to apply ?**

**Transformation of construction of case law : « horizontal »  
« flat », « cristallised » around the amounts determined by scales ?**

**« Performative » effect**



# Points of attention: civil, commercial, administrative matters

## For the judge

- Indirect effects over the impartiality of a judge ?
- Profilage ?

## Personal data

- Compatibility with the general regulation of data protection, CoE Convention 108 and national data protection legislations

# AI applications: criminal field



**Minority Report (2002), S. Spielberg**

# AI applications: criminal field

## Strengthened abilities to prevent and fight crime

- Predictive policing (detecting fraudes for instance)
- Hot spots/predictive criminal mapping (spots where crime is likely to happen)

## Predicting reoffending based on algorithms

- Before sentencing: determining whether or not to deprive an individual of liberty (HART in U.K.)
- In the sentencing stage (COMPAS aux Etats-Unis)

# Sample of COMPASS questionnaire

## Criminal Attitudes

The next statements are about your feelings and beliefs about various things. Again, there are no 'right' or 'wrong' answers. Just indicate how much you agree or disagree with each statement.

127. "A hungry person has a right to steal."  
☒ Strongly Disagree ☐ Disagree ☐ Not Sure ☐ Agree ☐ Strongly Agree
128. "When people get into trouble with the law it's because they have no chance to get a decent job."  
☐ Strongly Disagree ☒ Disagree ☐ Not Sure ☐ Agree ☐ Strongly Agree
129. "When people do minor offenses or use drugs they don't hurt anyone except themselves."  
☒ Strongly Disagree ☐ Disagree ☐ Not Sure ☐ Agree ☐ Strongly Agree
130. "If someone insults my friends, family or group they are asking for trouble."  
☐ Strongly Disagree ☐ Disagree ☒ Not Sure ☐ Agree ☐ Strongly Agree
131. "When things are stolen from rich people they won't miss the stuff because insurance will cover the loss."  
☒ Strongly Disagree ☐ Disagree ☐ Not Sure ☐ Agree ☐ Strongly Agree
132. "I have felt very angry at someone or at something."  
☐ Strongly Disagree ☐ Disagree ☐ Not Sure ☒ Agree ☐ Strongly Agree
133. "Some people must be treated roughly or beaten up just to send them a clear message."  
☒ Strongly Disagree ☐ Disagree ☐ Not Sure ☐ Agree ☐ Strongly Agree
134. "I won't hesitate to hit or threaten people if they have done something to hurt my friends."  
☐ Strongly Disagree ☐ Disagree ☒ Not Sure ☐ Agree ☐ Strongly Agree
135. "The law doesn't help average people."  
☒ Strongly Disagree ☐ Disagree ☐ Not Sure ☐ Agree ☐ Strongly Agree
136. "Many people get into trouble or use drugs because society has given them no education."  
☒ Strongly Disagree ☐ Disagree ☐ Not Sure ☐ Agree ☐ Strongly Agree
137. "Some people just don't deserve any respect and should be treated like animals."  
☒ Strongly Disagree ☐ Disagree ☐ Not Sure ☐ Agree ☐ Strongly Agree

# Points of attention: criminal field



**Risk of discriminations and mistakes**

**Transparency of the algorithm and equality of arms in a criminal trial**

**Which place, which effects of algorithms on judicial decision-making?**

# Points of attention: criminal field

**Risk of a resurgence of a determinist doctrine in criminal matters (vs. a social doctrine)**

**What individualization of sentence?**

**On the other hand, study whether big data can facilitate the collection of objective information on an individual's life path, processed by a professional (judge, probation officer)**

# What is justice ?



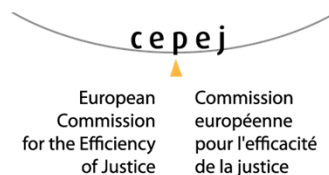
**12 Angry Men (1957), S. Lumet**



# Which avenues for governance of AI?

**Not hasty and controlled application by public decision-makers, legal professionals and scientists**

**Accountability, transparency and control of private actors.... Accompanied by "cyberethics"**

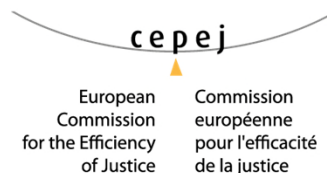


# Cyberethics in processing judicial decisions

Processing of judicial decisions should be driven by clear goals and in line with ECHR requirements

The methodology behind should be transparent and non-biased, and certified by an independent authority

Cyberethics as a clear framework for guiding operators and strengthening responsibility





# Towards AI ethics?

## **First European Charter of the use of AI in judicial systems**

### **1st part : A Charter**

Short document setting forth fundamental principles which should be guaranteed by any system of case law processing and analysis

### **2nd part : A glossary**

Definition of the technology words to ensure easy understanding by non-specialists

### **3rd part : a scientific study**

Carried out by 3 experts (1 judge, 1 IT expert, 1 expert on data protection) – lays the foundations of the Charter's recommendations

