AI IN LEGAL

IDEA LEAGUE - MODULE 3 - FEBRUARY 2019
CHALMERS UNIVERSITY OF TECHNOLOGY

Aniek Kempeneers	**Delft University of Technology**
Jacopo Pio Gargano	**Politecnico di Milano**
Simona Esposito	**Politecnico di Milano**
Leonard Zourek	**ETH Zurich**
Mirjam Schleiffer	**ETH Zurich**
Julia Maria Rennau	**RWTH Aachen University**
Magdalena Linden	**Chalmers University of Technology**

ABOUT THE PROJECT

Our process went as follows; we started with brainstorming in order to understand what AI means to us. Furthermore, we discussed features and applications of AI. After creating six main clusters, which are displayed below, we started ideation about opportunities for AI implementations in the legal system. This led to four scenarios to take into consideration; AI applications in court, AI applications in legal business, AI applications in law making, and AI applications in national security. Subsequently, we used a rotating brainstorm method to come up with as many ideas as possible. By building on top of eachother's ideas, we improved them and created a clear scenario. After that we split up and detailled the scenarios by connecting them to the previously defined clusters. Furthermore, we decided to analyze the scenarios from an ethical point of view, a Dr. Evil approach, and a Mrs. Philantrophist one.

Key considerations for AI

RELIABILITY OF DATA

Topics addressed: AI bias, data availability, AI possibilities for small countries, need for experts, what kind of data is needed, what is the starting point.

AI FOR HUMANS

Topics addressed: should AI be a mirror of society, fighting discrimination, fighting corruption.

ARTIFICIAL RELATIONSHIPS

Topics addressed: support or decrease of human interaction, replacement of frieds, attachment to "non-living" things, human-like robots, establishing trust in AI, personality.

AI AGAINST HUMANS

Topics addressed: resistance in society, AI controlled by democracy, how to attack AI's decisions, rational decision making, forecasts influence the forecasted situations.

EVIL AI vs. AI COPS

Topics addressed: superior to humans, integrity/privacy, superhumans, humans not being able to keep up, surveillance, powerstruggle in business, irresponsible decision making.

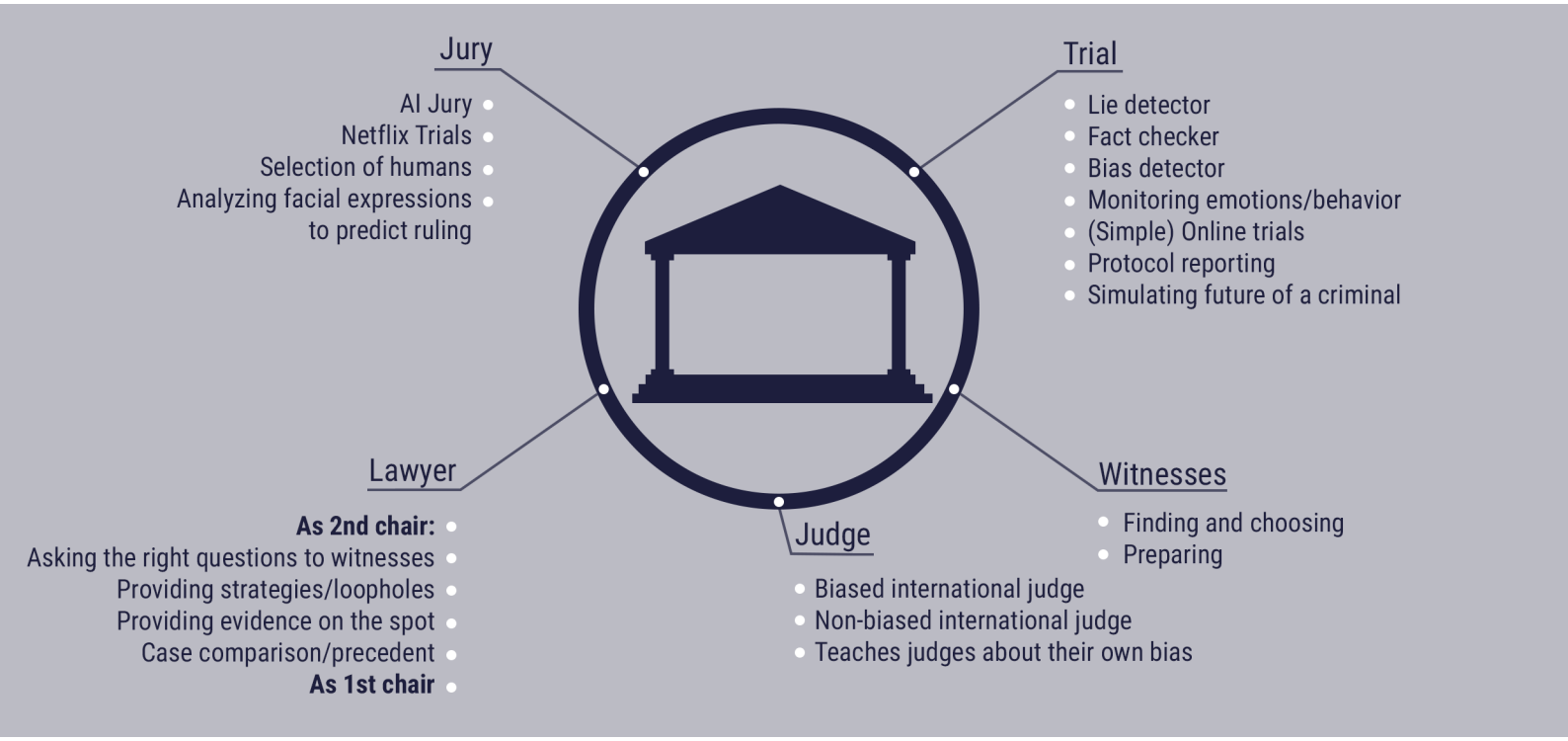
1ST OR 2ND DECISION/OPINION

Topics addressed: responsibility/accountability, human controller, substitute or support, automating boring tasks, AI as decision maker or as advisor, superior to humans.

AI APPLICATIONS IN COURT

The applications of AI in a courtroom can be numerous but depend on the legal system in place. The figure below gives an overview of the different entities involved in a trial that could use AI to support their work. AI could for example quickly search and provide useful information for a case (based on information that was useful to resolve previous cases) and check facts on the spot (i.e. during interrogations).

More futuristic scenarios may include the substitution of lawyers or judges by AI bots, implying a change in the field of work of these professions. Moreover, AI could be used to provide additional value to trials, for instance by confronting judges with the bias contained in their past rulings.



Dr. Evil

Employing AI in a courtroom, be it with or without decision power, offers numerous opportunities to twist the outcome in Dr. Evil's favour. He may induce some bias in the final decision or programmes bots that manipulate witnesses, jury members or judges. Placing a smart technology in the heart of our legal system, which is essential for a functioning state, has to be implemented with highest caution and transparency. Dr. Evil might also promote the alleviation of jury members by using an AI to produce a visual summary of the daily courtroom ongoings. Why should members of our society waste their time with days in trial, if they can just see a "Netflix trial" version of the happenings at home and form their opinion on the sofa?

But what if Dr. Evil doesn't tell the whole story or gives every jury member a different summary?

Mrs. Philantrophist

Wouldn't it be great if criminal convicts would never backslide into crime again? Mr. Philanthropist wants to path the way towards this higher goal via supporting more constructive and case specific penalties. He does this by programming an AI which will forecast the future of the convict based on various penalty options. The judge (and/or the jury) may use this information to choose convictions that will hopefully not only punish but also promote the reintegration of the individual into society and prevent backslides.

Ethical food for thought

The implementation of the above AI applications in a courtroom requires various legal clarifications. Apart from preventing manipulation of our legal system via programmers and their AI's, the question about data privacy is a fundamental one. Which data can be accessed in order to train the bot? How to handle the trade-off between data privacy and the performance of an AI? Are AI bots also bound to the attorney client privilege? And what happens if an AI commits a crime? Who is going to trial and how is that going to look like?

AI APPLICATIONS IN LEGAL BUSINESS

For many standard legal processes, AI can help simplifying and supporting both businesses and individuals. A **contract scanner** can help in drafting a new contract according to the customer needs, relying on data about existing contracts. It can also analyse a contract and find possible loopholes, checking errors and highlighting critical and missing passages, and possibly suggesting changes based on the user's preferences. An advanced version could "translate" contracts from one legal system to another (e.g. when a company expands to a new country). A **law consultation bot** will be a personal assistant, which, via chat, substitutes a lawyer in everyday and standard issues (i.e. work contract, loans, renting houses…).

It will also notify users about legal changes at the local, national and European level. Customer feedback will constantly improve the algorithm. AI can support the management of **intellectual property (IP)** by keeping track of new and existing patents. It could also be used to detect when IP is being stolen or copied, e.g. music or videos on the internet. These new features will change the organizational layout of law and consultancy firms, since standard processes will be performed by AI assistants, freeing up lawyers' time to work on more complex legal cases (or help programming better legal AIs). They will increase the ease of access of the population to legal services, which are currently prohibitively expensive.

AI APPLICATIONS IN LAW MAKING

Many times, loopholes in laws are detected when something undesired has already happened. It would be of great advantage to foresee loopholes during the legislative process already, to avoid damages. If an AI judge can be developed, this would open a great opportunity for improving legislation.

This judge would take as input data covering a wide range of thinkable criminal offences (e.g. 100000 random simulated cases of bank robbery) and, based on the laws, assign a penalty. If the sanction differs from the expected result (e.g. no sanction), the AI will highlight these outliers.

This will help the legislators in detecting possible loopholes and thus in improving the law-making process and make laws more robust. The procedure can be improved by having the AI monitor technological and societal trends. The laws can then also be tested for possible future cases to anticipate future loopholes – for instance when a self-driving car kills someone in an accident and it is not clear who is to be held accountable. Finally, the AI judge will be able to suggest improvements to legal texts, in order to eliminate loopholes – and eventually write law proposals autonomously.

Ethical food for thought

The use of AI in legislation raises the question whether a society wants an AI to draft laws and whether an AI judge should be able to draft its own laws - this would be an open violation of the separation of powers. The AI would gain a strong influence on law-making processes, changing the functioning of democracy itself. The constant detection of flaws in laws also creates a necessity to continuously change them, making the legal system less stable and more dynamic. This would make it difficult for the society to keep the pace with the change.

Dr. Evil vs. Mrs. Philantrophist

There is also a risk of abuse of the "loophole finder": indeed it could be used both by benevolent legislators and opportunistic actors looking to bypass the law, taking advantage of those loopholes. This is a comfortable situation for a venture capitalist developing such a system, since there are two groups of potential clients.

1

Reactive

Real case → Human judge → Unknown loophole → No sanction

2

Proactive

Many simulated cases → AI judge → Loophole detection → Law adjustment

AI APPLICATIONS IN NATIONAL SECURITY

1 Prevention through anomaly detection

2 Social credit system

3 Internet monitoring and social improvement

The hardware requirements behind prevention through anomaly consist of the installation of several technical devices to monitor, observe and analyze human behavior and world phenomena. These include for instance cameras, two-way speakers, GPS trackers and drones. The installation is taking place in public spaces such as streets, markets, theaters and universities. Whenever the AI spots an anomalous behavior, it communicates this to a central surveillance office and provides all necessary information to investigate and evaluate the case. Additionally, the AI can give advice on how to handle the situation according to previous cases relatively to resources allocation and strategy adoption. Furthermore, through anomaly detection the AI performs a deep social media analysis to identify atypical occurrences. For instance, the AI runs a study of patterns of an individual's social environment. Besides that the AI monitors financial transactions both of individuals and companies to identify possible frauds, money laundering, tax evasion and support of illegal organizations. The AI reports to a dedicated office which runs further investigations with the aid of psychologists and case related experts. Once the AI has acquired enough data about typical and atypical behavioral patterns it can perform a supervised deep learning to identify more behavioral features in order to prevent illegal actions. This inquiry leads to suggestions of programs for personal improvement.

The installation of the hardware mentioned above allows for the creation of a social credit system. The underlying idea is based on the evaluation of people's behavior in society: if an individual behaves in an ethical manner the AI rewards them with a positive social score, otherwise their social score decreases. Possible applications of a social credit system include but are not limited to profiling, background check and job suggestions. The combination of an AI which analyzes and evaluates behavior supports an implementation of smart gates which allow some people to enter a specific area only if they are not considered as a possible threat to society.

A third application field is internet monitoring which possibly leads to a social improvement. First, news distributed online are checked by the AI against information provided by reliable sources. This contributes to a reduction of prejudices which can be also performed on purpose: for instance AI is able to respond to racist posts with objective information to calm hate, influence the racists' point of view. Additionally, online bullying is limited by identifying it and consequently decreasing the bullies' social score as a punishment and way to condition their behavior.

Dr. Evil

The social credit system can generate forms of punishments and possibly contributes to a sharper manifestation of a class system. People may be sent to jail when their social score is below a certain threshold and apart from that individuals have only access to specific activities, places and platforms if they belong to a certain class.

Mrs. Philantrophist

From a utopian perspective, a prevention of bad habits through anomaly detection and behavior conditioning with the aid of a social score results in an eradication of illegal acts which leads to a better society.

Ethical food for thought

To put AI and national security in a controversial context one has to mention concerns about human rights and privacy. The AI in the presented scenarios affects individuals' lives by evaluating and rewarding their actions. However, would people agree to share al of their personal information such as their location, pictures, financial transfers as well as social media accounts? If a human feels not correctly judged by the AI and the organization behind how can they defend themselves? Should the AI be able to limit your freedom of movement through smart gates? By limiting the freedom of movement and allocating executive support the AI has the possibility to prevent suicides – but is suicide a human right? On the other hand, AI as mentioned before can help fighting discrimination, corruption and illegal actions. Nonetheless, AI needs to be trained through data and the only data available reflects our current behavior – so will AI be the mirror of society as it is or will it be a higher instance able to classify what is right and what is wrong?

CONCLUSION & DISCUSSION

So far, AI can be applied in several different areas within the legal system. They all have certain common value creation potential for both society and governments. On the social side, applying AI's can make legal consultation more accessible for a wider proportion of the population and support the identification of biases within the legal system. National security applications can help in detect crimes faster and optimize the allocation of security resources. Furthermore, with developed AI technologies governments can save resources by standardizing simple cases and focus on more complex ones.

In order to obtain these values our legal system needs to change its current structure and ensure safe use of AI. In fact, the implementation of these new solutions may lead to counterbacks and abuse. For this reason, it is fundamental to define regulations and laws about the use of AI, not only in the legal system but in all fields of application.

We as a society have to decide about the role and tasks AI's are allowed to take over and how humans will relate to these technologies. How can we ensure that we as a society can profit from these applications?

The last two days of intensively analyzing the topic has led us to discover more fundamental questions, thinking about the general assumptions and beliefs rooted in us and our culture. We had to rethink the concept of justice and how it is possible (or impossible) to define it and integrate it into the technologies that will shape our future.