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REPORT: AI AND INSURANCE – INITIAL OBSERVATIONS

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The Report provides snap-shot observations regarding the introduction of artificial intelligence (AI; more specifically, machine learning and deep learning) into the insurance industry. The Report is based on the "AI and the Future of Law" webinar, hosted by the Corporate and Financial Law Group, School of Law, University of Glasgow (December 2020; where As. Prof. Mudrić participated as a panelist).

AI: FRIEND AND/OR FOE FOR INSURANCE INDUSTRY

In general, particularly in the short-mid-term – a **friend**; machine learning certainly offers plenty of useful deliverables. It will enhance the **access to relevant information** to both sides of insurance contract (clients and insurance companies), enable **better understanding of the threats and the risk** (a good example being the threat of climate change, natural catastrophes, man-made catastrophes, and similar), enable enhanced policies (**personalized insurance policies and continuously adaptable pricing**, heavily depending on how individuals live, what they do on daily basis, and similar), promote **tailor-made** insurance

options (i.e., **drone insurance** per operation (as already in existence today, taking into consideration the cost of device and equipment, the size and weight, geographical area of operation, purpose of operation, and similar), **on-demand insurance, usage-based insurance, pay-as-you-live** and similar), enhanced **customer support** (enhanced capability of allocating best possible insurance options), **enhanced products** (i.e., package services for end-users (insurance, electricity, water and similar), or, safety, security and other equipment, as already available today), **faster claims resolution** (almost instant resolution, as already practice today with regard the motor vehicle policies), continuous cycle of insurance duration (with continuous adaptation to individual's behavioural patterns) as opposed to annual renewal and similar options), and similar.

Machine learning may be considered a **foe** to the insurance industry due to its capacity to **mitigate and neutralize specific risks** (i.e., reduced number of road accidents with the emergence of autonomous vehicles, reduced carriage of goods related accidents, and delays with the emergence of autonomous vessels, and similar). To a certain degree, it will drastically **alter the current market**, and specific, currently quite profitable insurance products will undoubtedly see their role as principal selling cards diminished.

When considering the notion of risk and the use of machine learning algorithms by the insurance industry, the **potential to predict threats and risk levels** should not be underestimated. The noted feature is likely to have a particular impact on the insured peril's assessment – what is and what is not to be considered a peril. Specific **insurable perils** may cease to be insurable because they might become predictable. Machine learning will inevitably make an impact on the current market products.

AI AS SOLUTION

Machine learning may lessen the previously mentioned fear by **eliminating human operators' presence** when analyzing the potential insurer's profile and preparing the policy offer, thus minimizing or precluding the insurer's human operators' access to finer details.

Indeed, clients may feel more comfortable sharing specific **personal details with an algorithm** without a human operator's interference. The machine learning algorithm, especially when considering the AI potential, will advance the use of **big data in real-time**, allowing for **unprecedented speed in service delivery**, from the negotiation part to the claim resolution. The insurance platforms powered by machine learning will allow for **individual client's policy assessment**, shifting towards a more **client-based tailor-made, per-usage policy**.

AI IMPACT ON UNDERWRITING AND CLAIMS PROCESS

Information asymmetry will continue to require the principle of good faith as an operational principle in insurance contracts. However, the **insurer's capacity to predict, foresee and anticipate specific facts, trends, or outcomes** will, to a particular degree, increase. With the **big data now being collected and analyzed** by various entities, there is a vast collection of individual points of information, principally, all individuals connected to the World Wide Web. Such considerations lead to the inevitable conclusion that the insurance industry will likely engage such entities in one way or another. To what extent will this be done, **what sort of data and information will be analyzed, by whom, and to what purpose remains a conundrum**. The insurers may only utilize such services as a regular check-up of pre-contractual or contractual information. Alternatively, such services may reflect the presence whereby the industry sometimes avails the private detective or forensic services. However, it is possible to imagine other kinds of use, which will be mentioned in the next section.

The benefits include fast collection and analysis of circumstantial data, facts, and other information, fast **decision-making**, fast insurance **payment**, or, perhaps even fast **dispute mitigation / AI arbitration**. It would be interesting to see whether two companies who currently apply different principles in handling their clients and claim process in general, once having shifted to the AI procedural claims process, are now aligned in that respect or

not. In other words, will there be **different AIs with different perspectives on what is rational, what is responsibility and liability, what is fair compensation**, and similar?

AI AND DISCRIMINATION

Machine learning algorithms and algorithms in general will, in principle, make decisions based on the **code that is written by a human** (what happens when deep learning AI starts creating is too difficult to predict). It is, in principle, possible to influence the coded decision-making methodology. **Bias and discrimination, as such, can become a part of programming**, with machine learning not capable of recognizing such decision-making as biased. Whether the "true AI" (advanced **deep learning**) will be able to **independently understand and apply ethics** in the fashion of an ordinary reasonable citizen remains to be seen.

Insurer's access to big data and machine learning software capable of analyzing such data, linked to a specific individual, may have diverse and, to a severe degree, unwanted and possibly dangerous consequences. At present, there have been reports that individual companies, when hiring new personnel, have required applicants' **DNA** samples to be analyzed as a part of a general health conditioning. In some instances, individual applicants were rejected due to their **genetic predispositions** to certain illnesses. In the future, the employer may send such data to the insurer to get employee-related insurance policy offers, only to get even more details on job applicants. Additional information may, in turn, place an additional burden on insurance premium calculation (high cost of insurance of that particular potential employee), rendering, in effect, that particular job applicant less wanted.

Like in any scenario where big data is utilized for commercial or other purposes, there is a chance of misuse. It is, however, difficult to assess where the borderline lies. Already today, there are numerous examples of **customers being willing to share their health data** (including day-to-day collection by wearable smart devices, such as a wristband, glasses,

smart clothes, medical devices, and similar) to get more personalized insurance options. Also, the insurers often avail of **private investigators**' and similar entities' services. Big data analysis in search of suspicious and possibly relevant data not disclosed by potential clients may, therefore, be identified with current practices. There is, however, one significant difference. The private investigators, in principle, do have a **limitation of both what information is available to them and to what extent they are capable of analyzing such data**. In contrast, an AI can exponentially advance the analysis of the target individual. The enhanced AI-derived analysis can, in the example above, lead to an **increase in premiums for clients with potential genetics-related issues**.

As another example, access to big data may lead to the geographical exclusion of insurance scope in certain areas where, statistically, there is a **higher chance of peril due to high crime, alcohol abuse, poverty, and similar**. In the past, big data has led to similar occurrences concerning mortgages and financial services. It is not unreasonable to hypothetically align such an example with insurance products. Furthermore, when considering the potential of individual, tailor-made, pay-as-you-live policies, both for life and non-life products, the **social context** of where individuals live, educational opportunities, job and career options, and similar, can have a significant influence on individual daily activities and exposure to various kinds of risks relevant for the concrete insurance policy, thus affecting the premium and benefits. Therefore, the bias and discrimination present in real life can significantly impact the AI-derived insurance options. Specific actuarial factors can become a **part of machine learning programming** as well. Therefore, if there is a desire to change certain negative occurrences, it is **necessary to regulate**. Whether the true AI will abandon the pre-coded bias and discrimination present in its predecessors' code is impossible to answer at this stage.

Absent precise regulation, it is possible to imagine a scenario whereby the insurance industry is associated with unsupervised and unrestricted access to big data. Such access may, in turn, **produce negative feelings** among and scare the potential clients from purchasing insurance policies out of **fear that their insurers may access too much individual**

information on them. Until the request for an insurance policy offers, insurance data may remain anonymized. Still, at that point, an AI aid or a human operator directs their attention to what the big data repository can offer as to a potential insurer's profile. Noted repository, of course, includes any information that may be utilized in biased and discriminatory decision-making. It is possible to envisage ethical guidelines on how insurers (human or AI) should utilize such data and/or what data can/cannot be used in what way, but until these matters are **appropriately regulated**, it is impossible to say to what extent the big data is (being) used.

It should be noted that the currently existing norms and regulation presupposes specific general consumers' rights, such as the "**right to be forgotten**" and "**right to explanation**" (*as per* Art. 22. GDPR Regulation). However, such regulation presupposes that the individual is aware of which personal information is being used for what purposes, how, and by whom (AI or human operator). Proper regulation of such rights, with clear rights' protection remedy paths, would impact combating bias and discrimination in insurance.

AI, AUTONOMOUS SYSTEMS, LIABILITY AND INSURANCE

Having in mind that the notion of liability does not change if the damage is caused by person B rather than person A (no matter what the term "person" stands for), the introduction of new technology into damage compensation scheme **should not in any way allow for the so-called "disruption" to phantom make-up excuses aimed at rendering certain classes of persons immune to damage compensation claims**. Otherwise, many Uber-like companies will spring overnight with "cleverly" written terms and conditions, excluding their liability for any damage resulting from, for example, the use of autonomous vehicles.

The introduction of autonomous systems introduces **new actors** into the traditional liability scheme: the autonomous software producer and the autonomous **hardware producer**. Additionally, new kinds of **cybersecurity services** are also potentially (or quite

likely) warranted, having in mind the cybersecurity threats that connected vehicles pose in the present and future.

What does change significantly is the apparent **need to rethink how the liable party is assessed and determined**. Whereas the traditional concept is based on the vehicle owner or leaseholder, a new type of **producer** slowly emerges **who is no longer solely responsible for motor vehicle utilization's structural and operational aspects**. Also, the owner becomes a passenger, and the machine learning software becomes a driver. The software producer may or may not be the same person who produces the self-driving hardware or the vehicle (not unusual, the shipbuilding process is a good example). The upcoming regulation may endeavor to keep the **traditional system in place with certain modifications** (liability scheme's evolution). In contrast, other relevant parties will possibly partake in either **direct guarantees** (*numerus clausus* damage/loss, limited timeframe) towards the injured party or **indirect guarantees** towards the owner or vehicle producer (brand).

There is one additional factor that must be considered when assessing future legal regimes. The general idea behind autonomous vehicles is **connectivity** – the vehicles will be connected and share information. What one vehicle sees in its surroundings utilizing its sensors is immediately sent to all surrounding vehicles coming in from the other direction or heading in the same direction. The erroneous sensor array may lead to false data being fed into the system, possibly initiating erroneous autonomous driving software decision-making, leading to road accidents. No longer is this a relatively simple matter of determining the responsible person among those involved in the road accident – it involves a more complicated question of causation (whether there was other data available, whether other vehicles should have corrected the false information, whether this is a software defect or hardware defect, and similar).

Perhaps this is something that should be left for the courts to determine. Still, the differences in legal traditions may lead to a different approach to enacting a new legal framework for autonomous vehicles. To that end, it is welcomed and, in fact, necessary to retain **strict liability and mandatory insurance as a liability package**, especially considering

inter-connected autonomous vehicles' complexity. The old/new framework must enable **efficient and reasonable compensation for injured parties**, both directly through insurance payment and court proceedings. Regarding the higher standard, to what extent can **machine learning and deep learning supersede the cognitive ability** to act outside of the scope of set rules remains to be seen. If it can be proven that machine learning and deep learning can superiorly adopt split-second decisions, it is also possible to consider higher expectations and standards. But if the **strict liability is in place**, the higher standard is irrelevant from the injured party's perspective.

Regarding autonomous vehicle insurance in general, a lot has already been said about the prospect of a **significant drop in motor vehicle insurance policies' share in the market**. Despite the expected road safety enhancement with the advent of autonomous vehicles, the product is unlikely to disappear entirely; it will, instead, **transform into different forms**, possibly connected to individual rides, depending on whether the owner uses the vehicle or not. It is possible to imagine a scenario whereby a particular portion of the population owns motor vehicles and uses their vehicles several times per day in the foreseeable future. In the meantime, the vehicles are set to taxi-mode, offering taxi service. Such taxi service is free-of-charge, as the revenue is gathered from advertisements displayed in the vehicle and/or on passengers' smart devices – including a special revenue if the algorithm determines that a specific advert shown during a specific ride led to a specific purchase, especially if the passenger opted to stop at an on-route shop (the same algorithm chose route) and make a purchase. Rather than the current systems of several motor vehicle-related insurance policies, depending on how the vehicle is being used, the **future motor vehicle insurance policy may integrate all previously separated policies and be valid for an individual ride**. **Insurance premium** money, unlike today, may be **paid by collecting a certain amount of revenue from the previously noted advertisements** and alike.

AI GOVERNANCE AND PERSPECTIVES

The insurance profession is quite regulated, but issues discussed thus far have not been adequately addressed. Certain aspects, of course, have been determined by case practice. The state should **not rely on the industry to create the so-called ethical guidelines but instead push for as precise regulation as possible**, particularly concerning advancing the **personal data rights and rights of data privacy to the level of human rights**. The middle ground is the industry's code of conduct (coupled with ISO standard(s)) with the states participating as signatories. The code of conduct becomes a **contractual clause** to each policy or terms and conditions. Any effort that results in a document that is not enforceable is a set of wishful thinking. More **regulation on big data is quite necessary**. **Insurers will no longer deal with pure information on clients but with client's rights in the form of their personal data**. To that end, the **insurance executives and other relevant personnel will have to get additional training** to understand the changes brought by introducing machine learning to the insurance business.

As previously mentioned, considering that different AIs might have a different perspective on all relevant aspects of insurance, starting with the general notions of responsibility and liability, insurable peril, insurance risk, and similar, the regulators and the industry should take some time to consider **whether it will become necessary to regulate certain aspects of coding in terms of what each AI must principally abide**. To what extent will the introduction of machine learning affect the change in structure and organization of insurance companies depends very much on the scope of new requirements necessitated by the new regulation. Indeed, the **regulators will have to understand the implications** of machine learning and big data on society and business. As of now, the regulators struggle to understand the already overreaching consequences that big data has produced on society. The lack of strategy has led to industries' self-initiative that usually amounts to simple public relations efforts. Any interference of a **private entity into another person's personal data must be regulated**, no matter whether this was a voluntary exchange of information or not, and no matter whether such data is publicly available or not.

The idea **of publicly available data** deserves a short consideration as well. As previously noted, in the present, certain insurance products include the voluntary collection of client's data through the means of smart wearable devices. Similarly, many applications offer useful utilities and services to persons willing to install such applications and share their information with the application. One such example is a typical work-out application allowing for, among other items, to measure the number of steps a person carrying the smart device makes. That person can share such data with a particular social platform. The fact, however, that the person decided to post the results on the social platform does not mean that the person willingly allowed any third party to use such data for any specific purposes**. It is also possible that the social platform, application producer, or third party will aggregate such data (not necessarily anonymize) and use that data for other purposes (usually commercial)**. In some cases, users are informed of such use; in some, not. The question raised is whether the insurers should be allowed to utilize such big data (through the auspices of a third-party entity collecting and analyzing such data) irrespective of the means of data collection and whether the consent has been acquired to use such data for insurance purposes, or not.

On a more optimistic side, the **Internet of Things will inevitably lead to real-time data collection and analysis in the insurance industry on a grand scale**. As noted above, this will create numerous opportunities as to tailor-made policies, usage-based policies, individual-based policies, and similar. The machine learning capabilities are visible in the phases preceding the risk mitigation and prevention, and indemnification, as noted previously. Given the above-highlighted benefits of significant data utilization, **it would appear that machine learning does significantly boost the risk mitigation and prevention department**.

WAY FORWARD

Data rights should be viewed as human rights, and this should be regulated. Insurers will have to consider the **implications of data and privacy protection** when assessing the potential relationship with existing and new clients and contracting third-party services concerning the big data collection and analysis. Machine learning has the potential of making insurance more affordable, more straight-forward, more efficient, and better suited to individual needs. Due to the listed factors, **machine learning may even bolster the distribution of individual insurance products that, so far, are lacking behind others**. Finally, behind machine learning algorithms stand **human coders who can influence the code** in the same way that the insurers influence policy drafting and claim processes. Therefore, the **regulation of AI** in insurance is necessary, especially its significant impact on big data utilization and data rights.

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