AI and Law

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The research area 'AI and Law' has a long history. Already in the 1940's academic discussions on technical tools for analysis of legal decisions and regulations by means of technology appeared, but related joint efforts can be traced further back than that. Boole used Jewish law as an example in 'The Laws on Thoughts' (1854) and Hollerith's tabulating machine was constructed in order to count people in a national census prior to presidential elections, as stipulated in legislation (1890). Modern research concerning computer science, including AI and Law, is documented from as early as the 1960s and international conferences on AI and Law have been held on a regular basis since the 1980s.

Research in AI and Law at Stockholm University (SU) encompasses both methodological aspects and regulatory issues. The approach assumes that technology must be designed so that compliance with legal and ethical principles is ensured. It is thereby postulated that AI cannot only reflect technical and operational efficiency, AI must also be politically, socially and ethically acceptable. Nor can systems that are able to change their operations autonomously be controlled solely by written law and legal principles – the regulatory frameworks controlling these systems must be interpreted, recast and embedded in their design. In this respect, AI and Law is a significantly multidisciplinary field of research and legitimate AI presupposes an amalgamation of jurisprudential, social, ethical and technical knowledge.

Methodological oriented research in AI and Law include, inter alia, autonomous vehicles (adhering to traffic legislation), smart buildings, live-in-labs and health care (ensuring privacy by design, accountability and non-discrimination), legislative techniques and automated legal decisions (jurisprudential system analysis and algorithmic development), e-government (embedding administrative laws, freedom of information and secrecy), consequential analysis of facial recognition, deep fakes and machine learning, as well as classification of algorithms and sensitive data sets. In parallel, research concerning regulatory issues include but are not limited to redistributions of liabilities, transparency, privacy, intellectual property rights, data and system security, vulnerability, new forms of criminal activities and development of ethical and legal impact assessment standards.

The ambition is to strengthen and ensure a logical development of an international research environment of excellent quality, able to operate at the forefront of AI and ELSI (Ethical, Legal and Social Impact) research. At SU research in AI and Law is conducted at the world's first research organisation focusing on the interaction between Law and IT, *the Swedish Law and Informatics Research Institute* (IRI) 'irilaw.org', established in 1968.

More than 50 years of sustained efforts have made it possible to establish a close to unique position in this area of research, nationally and internationally. The co-workers of IRI are experienced as legal and ethical experts in international ICT/AI research projects (FP7, H2020, Marie Skłodowska-Curie) and IRI is founding partner of the national initiative AI Sweden ('ai.se' launched in 2019). The unit is engaged in training schools and administering secondments for Early Stage Researchers in Marie Curie and COST actions. IRI has also hosted a Master Program in Law and IT for more than ten years, enrolling students from close to 70 countries.

As for novelty, new forms of AI draw the attention to new types of problems in almost all sectors of society – legal, ethical and social consequences are being generated at an unforeseen pace. The illustrations are close to countless. Machine learning provides a new paradigm for efficiency, facial

recognition enhance security and deep fakes is a ground-breaking tool for entertainment and the gaming industry, but these and other AI related phenomena may also challenge fundamental ethical and legal principles. The technology may even alter the preconditions for democracy and unpredicted applications as well as unintended usage may lead to manipulation, discrimination and illegitimate surveillance. ELSI of AI is a moving target in critical need of increasing attention.

The need to address the societal challenges AI brings about are broadly recognised. So far however few responses reflect more than tentative attempts to extrapolate methods and juxtapose solutions originating from established sciences – lawyers try to amend static black letter law with lists of vague ethical principles in order to regulate autonomous processes. At the same time computer scientists develop code with little or no interaction with jurisprudential research, often being oblivious of wider societal consequences. In contrast, proficient research in AI and Law presupposes efforts beyond established academic topics and since its inception the exploration of AI and Law has to a large extent been dependent on multidisciplinary work and external financing, often project oriented and of uncertain perseverance.

IRI is an internationally recognised research environment with extensive experience working with ELSI of digitalisation and AI at individual, organisational and societal levels. The essence of exclusiveness is the assumption that advancements in the field must build on multidisciplinary knowledge. The researchers are assigned as legal and ethical experts in topical H2020 projects reaching out to several sectors of society. Theoretical contributions related to ELSI and AI are illustrated in Ph.D. (LL.D.) dissertations: Computing Law, Seipel, 1977, Rättsautomation (Legal Automation) Magnusson Sjöberg, 1992, Automation of Legal Reasoning: A Study on AI and Law, Wahlgren, 1992, How to Regulate ICT, John, 2015, Legal Implications of Data Mining, Colonna, 2016, Our Humanity Exposed: Predictive Modelling in a Legal Context, Greenstein, 2017. Noticeable is also that IRI Prof. Magnusson Sjöberg was assigned principal investigator in the most recent Swedish legislative inquiries on research data and digitalisation (SOU 2017:50, SOU 2018:25, SOU 2018:36).

As for interactions with the surrounding society, IRI is one of the initiators of the Swedish association for IT and Law (SIJU), and a founder of the Trust for Legal Information (comprising 17 principal Swedish organisations and public authorities (including the Government offices, the Parliament, the Court administration and the Bar association). Apart from being a current member of the steering committee of AI Innovation of Sweden, IRI arrange international conferences and participate in research consortiums comprising partners from academia, public authorities and private business organisations.

IRI is a member of Network of Centers (NOC, networkofcenters.net/), a collaborative initiative among ca 90 academic institutions with various expertise with a focus on interdisciplinary research on the development, social impact, policy implications, and legal issues concerning the Internet. This collective aim to increase interoperability between participating Centers in order to stimulate the creation of new cross-national, cross-disciplinary conversation, debate, teaching, learning, and engagement regarding the most pressing questions around new technologies, social change, and related policy and regulatory developments. AI, Ethics and Law has succeeding grown to be a focal topic among many of NOCs members.

The host topic is law but due to the project-oriented nature of the research, the changing technology and different impacts in many sectors of society, several interrelations may become relevant. Documented multidisciplinary projects over time – concurrently reflected in educational activities – relate to, inter alia, Jurisprudence and Law including legislative and regulative techniques, IT-evidence, Intellectual property rights; Privacy; Ethics; Philosophy; Logic; System science; Library research; Social

sciences including Sociology, Law and Society, Risk analysis, Security, Cybernetics; Behaviour sciences including Psychology, Cognitive science, Computational linguistics, Legal language and Visualisations of the law; Information Technology and its diversities such as Informatics, AI, Computer science, Software development, Predictive modelling, Database protection, Data mining and Quality assessment and classification of data sets, algorithms and IT systems.