Artificial Intelligence and the Rule of Law

The Age of Legal Tech and Digital Governance in a Fractured Digital World

Edited by Armando Aliu

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"Artificial Intelligence and the Rule of Law is a timely, richly textured guide to the fast-converging worlds of legal tech, governance, and ethics. The book integrates doctrinal analysis with empirical benchmarks and even includes executable code. The book turn is a resource for courts, regulators, and builders alike. Each chapter offers a clear entry-point, whether you are tracking the EU AI Act, designing compliance tools, or re-thinking judicial accountability in the LLM era. It is a valuable addition to the AI-and-law shelf."

— Kevin P. Lee, *Intel Chair, Social Justice and Racial Equity Professor, Faculty of Law, North Carolina Central University, Durham, North Carolina, United States*

"Artificial intelligence holds great promise to improve access to justice and strengthen the rule of law. At the same time, technology challenges the traditional ways of making, applying and understanding the law. This book investigates both chances and risks and offers novel and thoughtful solutions. I very much recommend engaging with it."

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"This book is an essential resource for anyone interested in how AI and the Rule of Law interact. The contributors' diverse interdisciplinary perspectives provide tools that are fundamental to ensuring our increasing use of AI will enhance the Rule of Law for all."

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"The contributors to this excellent book provoke a host of urgent questions for our AI era—a time when we transition rapidly from analogue to digital, when hybrid forms of governance reduce reliance on both humans and signalling by rules, and when we continue to aspire to good governance. In these challenging conditions, what should we make of this aspiration? In particular, how does governance of, and by, AI sit with the Rule of Law?"

— Roger Brownsword, *Professor of Law at King's College London and Bournemouth University, UK; Editor of "The Cambridge Handbook of the Governance of Technology" (with Lary A. DiMatteo) Cambridge: Cambridge University Press (2025)*

Armando Aliu
Editor

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Editor
Armando Aliu
Institute of European Studies
Faculty of Social Sciences
University of Wrocław
Wrocław, Poland

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Dedicated to
'(In memoriam of) Fiqiret' & 'Musa (Eja)'

Preface

Artificial intelligence (*AI*) is not a '*superorganismic deus ex machina*' to solve all global matters and social dilemmas. There is a constantly evolving technological evolution process in which generative *AI* (*GAI*) tools and practices extracting technological responses. This book argues the most pressing challenges in *AI* technologies and practices, the entanglements of '*AI and Law*' and '*AI and Rule of Law*' nexus and digitally transformed fracturing world that is shaped by digital governance and digital ethics. It contributes to an understanding of digital transformation in legal systems and the age of *LegalTech* inextricably intertwined in responsible, humancentric, explainable, and trustworthy *AI* technologies, *GAI*, and *AI interdisciplinarity*. It draws attention to unraveling the legal labyrinth of regulatory frameworks on *AI*, the rule of law, digital human rights, digital democracy, and how these *AI* regulations intervene to the digital transformation of *LegalTech* across the world. It emphasizes the necessity for a robust regulatory framework to mitigate the risks of *AI* and overcome legal hurdles. The book combines technology, law, ethics, and other technology-related research fields from an interdisciplinary point of view.

The book scrutinizes the issues, risks, and opportunities of *AI* to uphold the rule of law, promote human rights, enhance access to justice, protect people's rights and fundamental freedoms (including data privacy and data confidentiality principle), and strengthen the rule of law-based inclusive society. *AI* technologies and practices have a significant transformative impact on justice systems. These have transformed the

administration of justice, law enforcement, civil and criminal investigations, and predictive justice (i.e., the use of algorithms to process cases supporting judges in their decision making).

The book sheds light on the impact of *AI* use on the development of the rule of law through considering the following issues: digitalization of justice systems, *AI*'s impact on safeguarding human rights, *AI* ethics, *AI* governance, *AI* use in justice systems, and so on. The book emphasizes that *AI*, rule of law, digital human rights, justice, and ethics are strongly interconnected from an interdisciplinary point of view. *AI* use in justice systems can increase the efficiency of judicial services for citizens, facilitate better access to justice, and reduce costs. Furthermore, the book delves into the challenges and risks of *AI* on its (in)consistency with ethical concerns, protection of privacy, personal data, and the General Data Protection Regulation (GDPR).

For this volume, we wanted to offer a wide scope across five dimensions. First, we began by presenting the relationship between *AI interdisciplinarity* and the rule of law. We distinguished '*AI and Rule of Law*' from '*AI and Law*' nexus and aligned *AI interdisciplinarity* with digital governance and digital ethics underpinned by *responsible AI*, and *AI4People* viewpoints. We highlighted the role of the arts and humanities in thinking about *AI* and history, present, and future of computational jurisprudence. Second, we argued the procedural fetishism and substantive due process in *AI* governance and digital constitutionalism, the right to be forgotten, and the legal feasibility of machine unlearning methods. Third, we particularly analyzed *GAI* governance and regulation for the future, and the shift from human vulnerability to digital vulnerability in the context of *AI* technologies and practices. Fourth, we argued interrelationships between the rule of algorithm and the rule of law by discussing *AI* systems and responsibility, the need for an international treaty on bio-technological ethics, international law between enhanced anthropocentrism and post-anthropocentrism, the EU *AI* Act, and the future of *AI* governance. Finally, we focused on the future of *AI* and the

rule of law through discussing and prioritizing digital ethics, regulatory framework, and human rights-centered *AI* governance.[1]

Wrocław, Poland
June 2025

Armando Aliu

[1] *Ethics Statement: All chapter manuscripts were checked for plagiarism prior to publication through iThenticate as a part of Crossref Similarity Check. According to iThenticate Similarity Index analysis reports, all chapter manuscripts are highly original. All chapter manuscripts were evaluated for their intellectual content without discrimination or bias. The editor strictly maintained the confidentiality of submitted manuscripts, sharing information only with relevant parties (e.g., contributors and editorial staff) as part of the publication process, in accordance with the GDPR. No content generated by AI technologies has been used in the chapter manuscripts.*

Acknowledgements

I am filled with gratitude for the contributors to this edited volume for their perseverance and dedication in producing their chapters, their thoughtful and penetrating insights, and the quality of their scientific contribution. The strength of this book is a testament to their commitment and scientific efforts that comprise a blend of various theoretically innovative and methodologically diverse intellectual approaches.

The idea for this particular book started in the autumn of 2022 when I at started working at Jagiellonian University in Kraków (Poland). This book was developed within the framework of the NAWA/NCN Project (particularly in connection with the work package 2: digital geopolitics and digital governance in a fracturing world). 'The Project is co-financed by the Polish National Agency for Academic Exchange (*Narodowa Agencja Wymiany Akademickiej – NAWA*) under the *NAWA* Guest Professorship program' and the 'Polish National Agency for Academic Exchange within the *NAWA* Chair program'. I wish to acknowledge the financial assistance of the *NAWA* grant (*PPN/PRO/2020/1/00003/DEC/1*) from the Polish Academic Exchange Council and *NCN* grant (*ZARZADZENIE NCN 94/2020*) from the Polish National Science Council (*Narodowe Centrum Nauki– NCN*).

This edited book was also written in the framework of the *OPUS 26* project that is entitled '*Towards co-creative just transition at the urban level in Europe*' and conducted in the Institute of European Studies, Faculty of Social Sciences at the University of Wrocław (Poland).

The *OPUS 26* project is financed by the Polish National Science Council (*NCN*). I wish to acknowledge the financial assistance of the *OPUS 26* grant (*Reg. No: 2023/51/B/HS5/02581*) from the Polish National Science Council (*NCN*). I am grateful to *NAWA* and *NCN* for the funding that made the research collaboration possible. I am thankful to Aldona Wiktorska-Święcka (University of Wrocław, Poland), Shu-Chen Li (Dresden University of Technology, Germany), Ines Schmidt (Dresden University of Technology, Germany), Franziska Petri (KU Leuven, Belgium), Klaudia Proniewska (Jagiellonian University, Poland), and Tomasz Grodzicki (Jagiellonian University, Poland) for their help, guidance, and assistance during the *NAWA* and *NCN* projects lifetime. I am deeply indebted to the University of Wrocław, Faculty of Social Sciences, Institute of European Studies (Poland), Dresden University of Technology (Germany), the Europa-Kolleg Hamburg (Germany), Jagiellonian University, Faculty of Medicine, Department of Internal Medicine and Gerontology/Centre for Digital Medicine and Robotics (Poland), the Institute for Forecasting, Centre of Social and Psychological Sciences (CSPS), Slovak Academy of Sciences (Slovakia), and Inner-City Fund–ICF (USA) for ensuring research opportunities and having a productive and vibrant research ecosystem in which I could explore and develop the ideas that are central to the edited book.

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The autumn of 2022 was a stunning turning point for me. I was a participant of the *UNESCO MOOC* Seminar (TFS English) 'Artificial Intelligence and the Rule of Law'. The *UNESCO* seminar highlighted AI's application and impact on the rule of law and structured around six modules: (1) Why digital transformation and AI matter for justice systems? (2) AI adoption across justice systems, (3) the rise of online courts, (4) algorithmic bias and its implications for judicial decision making, (5) safeguarding human rights in the age of AI, and (6) AI ethics & governance concerning judicial operators. The seminar unpacked the opportunities and risks of the increasing adoption of AI technologies across justice systems and AI's impact on the administration of justice, particularly concerning human rights and AI ethics and governance issues. I am especially grateful to *UNESCO* and the *Future Society* for integrating the seminar participants with the activities of the '*Athens Roundtable on AI and the Rule of Law*' that is the premier international, multi-stakeholder gathering on artificial intelligence, legal systems and functions, regulatory compliance, and the rule of law. With the support and guidance of *UNESCO* and the *Future Society*, I was able to participate in the events and discussions of the *fourth* (2022), the *fifth* (2023), and the *sixth* (2024) '*Athens Roundtable on AI and the Rule of Law*'.

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This edited book has a charity initiative. All earnings (e.g., one-time remuneration fee, royalties, net receipts of subsidiarity rights, etc.) that will be gained from this book will be donated to the United Nations International Children's Emergency Fund (*UNICEF*). I wish to extend my heartfelt gratitude and appreciation to *UNICEF*'s dedicated supporters worldwide for their unwavering commitment to improving the "*Lives of Children*". The statement "Children are our future" is somewhat incomplete. "*Children are the Present*".

Therefore, as one of the *UNICEF*'s supporters[1], I invite individuals to make a donation (https://help.unicef.org/gao/donate?country=31) to *UNICEF* to "*Save and Protect the World's Most Vulnerable Children*". *UNICEF* works to "*Save Children's Lives*". To "*Protect Children's Rights*". To "*Keep Children Safe*" from harm. To "*Give Children a Childhood*" in which they're protected, healthy, and educated. To "*Give Children a Fair Chance*" to fulfill their potential. Children are our future only if we "*Shape a Responsible, Sustainable, and Better/Brighter Future for Children*". Perhaps, *AI* and *automated/humanoid robots* will get smarter than our children in the future; however, machines will never be more important than human beings in this world.

[1] Further clarifications regarding how to be a volunteer with *UNICEF* are available at: https://www.unicef.org/careers/volunteers-unicef

Contents

Contributors

Ikran Abdirahman High Court of Kenya & the DIFA Legal, Nairobi, Kenya

Mohamed Ben Achour Centre de Recherche Léon Duguit (CRLD), Université Paris-Saclay, Paris, France

Armando Aliu Institute of European Studies, Faculty of Social Sciences, University of Wrocław, Wrocław, Poland

Dorian Aliu University of New York Tirana (UNYT), Tirana, Albania

Yunan Chen Beijing Foreign Studies University (BFSU), Beijing, People's Republic of China

Liane Rose Colonna Department of Law, Stockholm University, Stockholm, Sweden

Begoña Gonzalez Otero Max Planck Institute for Innovation and Competition, Munich, Germany;
The Governance Lab (GovLab), New York, USA

Sofia Klymchuk Ministry of Digital Transformation of Ukraine, Kyiv, Ukraine

David Krause Marquette University, Milwaukee, WI, USA

Hellen van der Kroef Law & Tech Lab, Faculty of Law, Maastricht University, Maastricht, Netherlands

Rūta Liepiņa ALMA-AI Bologna Interdisciplinary Research Center for AI and Law, University of Bologna, Bologna, Italy

Beatrice Panattoni Department of Law, University of Verona, Verona, Italy;
Faculty of Law, Economics and Finance, University of Luxembourg, Luxembourg, Luxembourg

Tobias Oechtering Division of Information Science and Engineering, KTH Royal Institute of Technology, Stockholm, Sweden

John Tasioulas Institute for Ethics in AI, Faculty of Philosophy, University of Oxford, Oxford, UK

Josh Lee Kok Thong Department School of Law, University of California, Berkeley, Berkeley, USA

Themistoklis Tzimas Aristotle University of Thessaloniki, Thessaloniki, Greece

Monika Zalnieriute Faculty of Law, Vilnius University, Vilnius, Lithuania;
Lithuanian Centre for Social Sciences, Vilnius, Lithuania

Surong Zhu Beijing Foreign Studies University (BFSU), Beijing, People's Republic of China

Abbreviations

AAAI	Association for the Advancement of Artificial Intelligence
ABA	American Bar Association
ACHR	African Charter of Human Rights
ACUNS	Academic Council on the United Nations System
ADM	Algorithmic Decision Making
AGI	Artificial General Intelligence
AI	Artificial Intelligence
AI4People	Artificial Intelligence for People
AI4S	Artificial Intelligence for Science
AIDP	International Association of Criminal Law (*Association Internationale de Droit Pénal*)
AI HLEG	High-Level Expert Group on Artificial Intelligence
ANI	Artificial Narrow Intelligence
ANN	Artificial Neural Network
AR	Augmented Reality
AU	African Union
AU AIS	African Union Continental AI Strategy
BDA	Big Data Analytics
CAD	Computer Aided Design
CAHAI	Council of Europe Ad Hoc Committee on Artificial Intelligence
CALR	Computer-Assisted Legal Research
CBR	Case-Based Reasoning
CFREU	Charter of Fundamental Rights of the EU
ChatGPT	Chat Generative Pre-trained Transformer
CJEU	Court of Justice of the EU

CMLRs	Computational Models of Legal Reasoning
CNN	Convolutional Neural Network
COBOT	Collaborative Robot
CoE	Council of Europe
CoE-CAHAI	Ad hoc Committee on Artificial Intelligence
COST	European Cooperation in Science and Technology
COVID-19	Coronavirus Disease 2019
DF	Deepfake
DL	Deep Learning
DNA	Deoxyribonucleic Acid
EAB	Ethics Advisory Board
EAG	Ethics Advisory Group
EbD	Ethics by Design
EC	European Commission
ECHR	European Convention on Human Rights
ECtHR	European Court of Human Rights
EGE	European Group on Ethics in Science and New Technologies
ESC	European Social Charter
EU	European Union
EU AI Act	The European Union's Artificial Intelligence Act, Regulation (EU) 2024/1689
FRIAs	Fundamental Rights Impact Assessments
FRT	Facial Recognition Technology
GAI	Generative AI
GANs	Generative Adversarial Networks
GDPR	General Data Protection Regulation
GPAI	General Purpose AI Systems
GPT	Generative Pre-trained Transformer
HGNT	Human Nuclear Genome Transfer
HITL	Human-in-the-Loop
HIV	Human Immunodeficiency Virus
HR	Humanoid Robot
HUDERAF	Human Rights, Democracy, and the Rule of Law Assurance Framework
IBA	International Bar Association
IBC	International Bioethics Committee
ICAIL	International Conference on AI and Law
IE	Information Extraction
Interpol	International Criminal Police Organization
IoT	Internet of Things
IRB	Institutional Review Board
IT	Information Technology
LegalTech	Legal Technology

LLM	Large Language Model
LLR	Log-Likelihood Ratio
(L)NLP	(Legal) Natural Language Processing
MITL	Machine-in-the-Loop
ML	Machine Learning
MNCs	Multinational Corporations
MOOC	Massive Open Online Course
NAWA	Polish National Agency for Academic Exchange (*Narodowa Agencja Wymiany Akademickiej*)
NCN	Polish National Science Council (*Narodowe Centrum Nauki*)
NCOB	Nuffield Council on Bioethics
PITL	Public-in-the-Loop
PSITL	Public-Servant-in-the-Loop
QA	Question Answering
QMS	Quality Management System
R&D	Research and Development
RAG	Retrieval-Augmented Generation
RBR	Rule-Based Reasoning
RL	Reinforcement Learning
RPA	Robotic Process Automation
RTBF	Right to be Forgotten
SMEs	Small and Medium-sized Enterprises
SSHA	Social Sciences, Humanities and Arts
STEM	Computer Science and Data Science
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNESCO	UN Educational, Scientific and Cultural Organization
UNGPs	UN Guiding Principles on Business and Human Rights
UNICEF	UN International Children's Emergency Fund
UNICRI	UN Interregional Crime and Justice Research Institute
VR	Virtual Reality
WoS	Web of Science
XAI	Explainable Artificial Intelligence
WHO	World Health Organization
WTA	World Transhumanism Association
WWW	World Wide Web

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CHAPTER 1

Introduction: *AI Interdisciplinarity* and the Rule of Law—The Age of Legal Tech and Digital Governance Shaped by Digital Ethics, *Responsible AI*, and *AI4People*

Armando Aliu and Dorian Aliu

'If you look around, there are very few examples of more intelligent things being controlled by less intelligent things, which makes you wonder whether when AI gets smarter than us, it's going to take over control.'
– Geoffrey E. Hinton

A. Aliu (✉)
Institute of European Studies, Faculty of Social Sciences, University of Wrocław, Wrocław, Poland
e-mail: armando.aliu@uwr.edu.pl

D. Aliu
University of New York Tirana (UNYT), Tirana, Albania
e-mail: dorianaliu@unyt.edu.al

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1.1 *AI Interdisciplinarity* and the Age of Legal Tech

Since John McCarthy coined the term '*Artificial Intelligence* (*AI*)' in 1956, *AI* has entered a broad spectrum of scientific disciplines and research fields.[1] *AI* in the legal research landscape first appeared in a research paper developed for the '*Mechanization of Thought Processes Conference*' that was held between November 24–27, 1958, in Teddington, England.[2] Through the digitalization of science, technology, and innovation, *AI*-based technologies, generative *AI* (*GAI*), computer-assisted legal research (*CALR*), machine learning (*ML*), deep learning (*DL*), artificial general intelligence (*AGI*), internet of thinks (*IoT*), collaborative robot (*COBOT*), humanoid robot (*HR*), robotic process automation (*RPA*), quantum computing technologies and supercomputers, augmented reality (*AR*), virtual reality (*VR*), smart enhanced algorithms, big data analytics (*BDA*), facial recognition technology (*FRT*), and huge amounts of digital data enabled automated systems to perform tasks in digital universe and started undertaking the role of human intelligence.[3] The evolution of *AI* has four phases: (1) *rule-based AI* (i.e., using a set of prewritten rules to make decisions and solve problems),[4] (2) *ML* (i.e., a 'subfield of *AI* that studies the ability to improve performance based on experience, adapt to new circumstances and detect/extrapolate patterns'), (3) *DL* (i.e., *ML* using multiple layers of simple, adjustable computing elements), and (4) *GAI* (i.e., 'the ability

[1] McCarthy, J., Minsky, M. L., Rochester, N. & Shannon C. E. (1955). *A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence*. Hanover, NH: Dartmouth College.

[2] Mehl, L. (1959). Automation in the legal world: From machine processing of legal information to the 'law machine' (pp. 755–787). November 24–27, 1958, the National Physical Laboratory, Teddington, England.

[3] OECD/Eurostat (2018). *Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation: The Measurement of Scientific, Technological and Innovation Activities*. (4th Edition) Paris/Eurostat, Luxembourg: OECD Publishing, pp. 241–254; OECD (2020). *The Digitalisation of Science, Technology and Innovation: Key Developments and Policies*. Paris: OECD Publishing, pp. 84–86; Raj, P., Kumar, A., Dubey, A. K., Bhatia, S. & Manoj, O. (eds.) (2023). *Quantum Computing and Artificial Intelligence*. Berlin: Walter de Gruyter, pp. V–VI.

[4] Dawson, A. G. (2024). Algorithmic adjudication and constitutional AI—The promise of a better AI decision making future? *SMU Science and Technology Law Review*, *27*(1): 11–37, pp. 26–27.

of *AI* to generate content, speech, and action that is indistinguishable from human output').[5] There will always be *pros* and *cons* for the advancement of *AI* research and rapid expansion of digital universe in which human intelligence has entered the dominance of revolutionizing *AI*, anthropomorphizing the non-human, and rapid advancement stage of innovation in *AI*-based technologies.[6]

The '*AI interdisciplinarity*'[7] issue is crucial to knowledge production and the development of *AI* technologies and applications in specific research fields. According to Susskind, lawyers and legal theorists need to be more familiarized with the stunning advances in *AI* and certain crucial matters, such as knowledge-based systems in law, the potential, the limitations, and the dangers of *AI* and computer science to legal practice and research. *AI interdisciplinarity* created a synergy[8] and mutual understanding between lawyers, legal theorists, computer scientists, computer engineers, logicians, or mathematicians and triggered them to investigate further the applications of computer technology to

[5] Russell, S. J. & Norvig, P. (2022). *Artificial Intelligence: A Modern Approach. 4th Global Edition*. Harlow: Pearson, pp. 19–44; van der Sloot, B. (2024). *Regulating the Synthetic Society: Generative AI, Legal Questions and Societal Challenges*. Oxford: Bloomsbury, pp. 1–2.

[6] From an *AI SWOT* analysis perspective, *pros* will prioritize and praise the strengths and opportunities of *AI* in the short run, whereas *cons* will alert and harshly criticize threats (e.g., unacceptable and high risks of AI systems, etc.) and weaknesses of *AI* in the long run.

[7] Interdisciplinarity in *AI & Law* was unearthed in the 'Interdisciplinary Research Project' that was conducted by the Programing Research Group at the University of Oxford Computing Laboratory. The project was a part of a program of Research Council under grant GRA/A/43124. *See* Sufrin, B. (1981). Reading formal specifications. Oxford: University of Oxford Computing Laboratory.

[8] Susskind categorized two schools/approaches as '*ideal types*' (according to the terminology of Max Weber) in the field of *AI & Law*, such as '*pragmatism*' (i.e., the systems that can be operationalized/commercialized and excluded from theoretical problems) and '*purism*' (i.e., focusing on the nature of the law and intelligence with no regard for the delivery of commercially viable systems). Susskind's recommendation to encourage ideal collaboration between the '*pragmatists*' camp and the '*purists*' camp can be considered as an advancement strategy of *AI interdisciplinarity* to establish a holistic perspective in the field of *AI* and legal reasoning and accelerate knowledge production and development. *See* Susskind, R. (1989). Pragmatism and purism in artificial intelligence and legal reasoning. *AI & Society*, *3*: 28–38, pp. 31–32.

the law.[9] *AI* has increased complexity[10] in interdisciplinary knowledge production in mathematics, technology, psychology, sociology, and law/*LegalTech*[11]. Hence, complex issues require the collaboration of social scientists, natural scientists, engineers, legal experts, and business professionals[12]. In 2019, the *COVID-19* pandemic sparked a global research effort and encouraged diversified interdisciplinary research groups and interdisciplinary research clusters using *AI* technologies and applications and collaborate with each other to respond promptly to the early stages of the pandemic[13]. During the *COVID-19* pandemic, the use of large language models (*LLMs*)[14] in academia posed ethical dilemmas and

[9] Susskind, R. (1986). Expert systems in law: A jurisprudential approach to artificial intelligence and legal reasoning. *The Modern Law Review*, *49*: 168–194, pp. 168–170.

[10] Toulmin, S. E. (2003). *The Uses of Argument*. (updated edition) Cambridge: CUP, pp. 7–9; Verheij, B. (2020). Artificial intelligence as law. *Artificial Intelligence and Law*, *28*: 181–206, pp. 189–191.

[11] *LegalTech* is conceived as IT solutions which include both hardware and software utilized in the law. From interdisciplinary perspective, *LegalTech* has been misunderstood by non-legal professionals due to broad usage of its synonyms, such as 'Law Tech', 'Legal IT', or 'Legal Informatics' in the literature. There are three stages in *LegalTech*: *LegalTech 1.0* (technology [e.g., softwares, IT systems, online services, etc.] that supports the work of lawyers as professionals), *LegalTech 2.0* (advanced technology not only supporting lawyers, but also substituting itself for the work of humans and automating the acts to be taken—e.g., smart contracts, tokenization of processes, crypto-assets, etc.), and *LegalTech 3.0* (the higher tier where the decision is made by a system, on the basis of independently acquired data and self-learning—e.g., using *AI* or advanced algorithms utilizing *ML*). *See* Szostek, D. (2021). The concept of legal technology (LegalTech) and legal engineering. In: Szostek, D. & Załucki, M. (eds.) *Legal Tech: Information Technology Tools in the Administration of Justice* (pp. 19–28). Baden-Baden: Nomos, pp. 19–22.

[12] Lu, C. (2024). Rethinking artificial intelligence from the perspective of interdisciplinary knowledge production. *AI & Society*, *39*: 3059–3060, p. 3059.

[13] Abbonato, D., Bianchini, S., Gargiulo, F. & Venturini, T. (2024). Interdisciplinary research in artificial intelligence: Lessons from COVID-19. *Quantitative Science Studies*, *5*(4): 922–935, pp. 922–924.

[14] For instance, the utilization of some of *AI* tools (e.g., *ChatGPT* [by OpenAI], *Qwen* [by Alibaba], *Llama* [by Meta], *DeepSeek*, *Bing/Copilot*, *Research Rabbit*, *Mistral*, *Doubao*, etc.) as 'co-authors and/or reviewers' has been considered as a threat for the quality of scientific publications due to the specific reason that *AI* tools do not have legal/moral responsibility of an authorship. Enriched content of texts retrieved by GAI pose a risk of '*high sophistication*' that can be perceived as '*illusion*', a leak of meaning in a loophole of fuzzy data mixture and complex syntax, and a complexification handicap for *AI interdisciplinarity*.

raised serious concerns toward the responsibility, dignity, and credibility of science[15].

At the very beginning of the evolution process of *AI* in legal research domain, legal scholars and practitioners (except tort lawyers[16], information technology lawyers[17], and intellectual property lawyers) were resistant and reluctant to create a strong interrelationship between information technology and law[18]. They took little interest in embracing technology concepts due to the fuzzy tech terminologies and misconceptions[19] used in computer science and data science (*STEM*) and consider themselves strictly bound by 'national law'. Many jurists and legal theorists followed Hans Kelsen's argument (i.e., *the Pure Theory of Law [Reine Rechtslehre]* that syncretizes the *separability thesis* and the *normativity thesis*). Kelsen's '*Pure Theory of Law*' answers the question of '*what the law is*' (*de lege lata/lex lata*), not '*what the law ought to be*' (*de lege ferenda/lex ferenda*)—i.e., the separation of '*Law*' and '*Morals*'.[20] Kelsen

[15] Scimeca, M. & Bonfiglio, R. (2023). Dignity of science and the use of ChatGPT as a co-author. *ESMO Open*, *8*(4): 1–2, p. 1.

[16] Morgan, J. (2017). Torts and technology. In: Brownsword, R., Scotford, E. & Yeung, K. (Eds). *The Oxford Handbook of Law, Regulation and Technology* (pp. 523–546). Oxford: OUP, pp. 523–524.

[17] Valcke, P., Graef, I. & Clifford, D. (2018). iFairness –Constructing fairness in IT (and other areas of) law through intra- and interdisciplinarity. *Computer Law & Security Review*, *34*: 707–714, pp. 707–708.

[18] Dimatteo, L. A., Poncibò, C. & Cannarsa, M. (eds.) (2022). *The Cambridge Handbook of Artificial Intelligence: Global Perspectives on Law and Ethics*. Cambridge: CUP, pp. xxi–xxii.

[19] Buchanan, B. G. & Headrick, T. E. (1970). Some speculation about artificial intelligence and legal reasoning. *Stanford Law Review*, *23*(1): 40–62, pp. 40–41.

[20] Our intention is not to mull over the contradictory perspectives (of Hans Kelsen, H.L.A. Hart, Lon Fuller, Jeremy Bentham, John Austin, Jerome Hall, Hermann Heller, Gustav Radbruch, Joseph Raz, Ronald Dworkin, etc.) related to the separation of '*law*' and '*morals*' in legal positivism and philosophy of law. *See* Green, L. (2008). Positivism and inseparability of law and morals. *New York University Law Review*, *83*(4): 1035–1058; Spaak, T. (2005). Kelsen and Hart on the normativity of law. *Perspectives on Jurisprudence*, *48*: 397–414; Rooney, M. T. (1948). Law without justice?—The Kelsen and Hall theories compared. *Notre Dame Lawyer*, *23*(2): 140–172; Moore, J. G. (2020). Hart, Radbruch and the necessary connection between law and morals. *Law and Philosophy*, *39*(6): 691–704; Carlson, D. G. (2009). Hart avec Kant: On the inseparability of law and morality. *Washington University Jurisprudence Review*, *1*: 21–96; Pino, G. (2014). Positivism, legal validity, and the separation of law and morals. *Ratio Juris*, *27*(2): 190–217; Dyzenhaus, D. (1996). Hermann Heller—An introduction. *Cardozo Law Review*, *18*: 1129–1137.

sought to preclude from the cognition of positive law all elements foreign thereto[21]. This particular distinction requires considerable attention to identify the constraints of *AI* in law discipline, as well as normativity in the strictly legal sense and moral sense. For instance, *AI* technologies and applications can contribute to the technical aspects of law, such as case-based reasoning (*CBR*), rule-based reasoning (*RBR*), computational models of legal reasoning (*CMLRs*), etc.[22]; however, *AI* cannot quite tell us '*what the law ought to be*' or formulate an '*ideal legal order*'.[23] Kelsen suggested that the limits of the subject and its cognition must be clearly fixed as such: 'The specific science of law (i.e., jurisprudence) must be distinguished from the philosophy of justice, and from sociology, or cognition of social reality'[24]. Kelsen and his predecessors in the legal positivist camp resist the inclination to turn to '*ethics*[25]', psychology, and

[21] Kelsen, H. (1941). The pure theory of law and analytical jurisprudence. *Harvard Law Review*, *55*(1): 44–70, pp. 44–45; Kelsen, H. (2002). *Introduction to the Problems of Legal Theory* (Translated by B. L. Paulson & S. L. Paulson) Oxford: Clarendon Press, pp. xxvi–xxix.

[22] Ashley, K. D. & Bridge, D. G. (eds.) (2003). *Case-Based Reasoning Research and Development*. Berlin: Springer, p. v; Rissland, E. L., Ashley, K. D. & Branting, L. K. (2006). Case-based reasoning and law. *The Knowledge Engineering Review*, *20*(3): 293–298, pp. 293–295.

[23] Essentially, *a monist approach à la Kelsen* and hierarchical relationship within the monist legal system structure (i.e., norms on a higher level authorize the creation of norms on a lower level) can form a more legitimate and effective ground for reconstruction of a global legal order. Kelsen asserted that international law and the various state legal systems taken together constitute a *unified normative system* (*monism*). *See* Spaak, T. (2013). Kelsen on monism and dualism. In: Novakovic M., (Ed.) *Basic Concepts of Public International Law: Monism & Dualism* (pp. 322–343). Belgrade: Alter DOO and Faculty of Law, University of Belgrade, Institute of Comparative Law.

[24] Kelsen, H. (1941). The pure theory of law and analytical jurisprudence. *Harvard Law Review*, *55*(1): 44–70, p. 44; Kelsen, H. (2002). *Introduction to the Problems of Legal Theory* (Translated by B. L. Paulson & S. L. Paulson) Oxford: Clarendon Press, pp. xix–xxvi.

[25] At this point, we refrain to enter into the historical debate of 'natural law' versus 'positive law/legal positivism'. *See* Kelsen, H. (2005). *General Theory of Law and State* (1st ed.). New York: Routledge; Raz, J. (1979). *The Authority of Law: Essays in Law and Morality*. Oxford: Clarendon Press; Hart, H. L. A. (1994). *The Concept of Law*. (2nd Edition) Oxford: Clarendon Press; Finnis, J. (1980). *Natural Law and Natural Rights*. Oxford: Clarendon Press; Alexy, R. (2008). On the concept and the nature of law. *Ratio Juris*, *21*(3): 281–99; Dworkin, R. A. (1982). "Natural" law revisited. *University of Florida Law Review*, 34(2): 165–188.

the like for help on legal questions. Therefore, there is a sharp distinction between the 'science of law', the 'philosophy of justice', and the 'sociology of law'.

In light of these considerations, *AI interdisciplinarity* and *AI & Rule of Law* entanglements can be considered apart from *AI & Law* that is more connected to the traditional legal positivism and legal practice using computational models. *AI & Law*, a subfield of '*AI/computer science* research', focuses on designing computer programs/computational models that perform legal reasoning. *AI & Law* interacted with each other and drew attention to *theoretical aspects* of computational frameworks/models for legal/automated reasoning, knowledge representation and reasoning, knowledge engineering, and legal philosophy[26] and *practical aspects* of intelligent legal information systems and (legal) natural-language processing—*(L)NLP*. In the mid-1980s, legal scholars and practitioners worked on *AI*-supported *CBR*, *RBR*, and legal argumentation. A synergy emerged not only between *AI & Law*, but also between *AI* and *AI & Law* that exceeds the boundaries of *AI* technologies and applications and covers learning, representation, and reasoning[27]. For instance, many *AI & Law* researchers adopted open-source text analysis tools and legal applications to identify argument-related information in legal texts and create a shift from legal information retrieval to legal argument retrieval through automated question answering (*QA*), information extraction (*IE*), and argument mining from legal texts. In other words, there is an interconnection between *CMLRs* and legal texts. Kevin Ashley highlighted that *AI & Law* clarifies how new technologies for

[26] Ashley, K. D. (2013). Teaching law and digital age legal practice with an AI and law seminar. *Chicago-Kent Law Review*, *88*(3): 783–844, pp. 783–786; Buchanan, B. G. & Headrick, T. E. (1970). Some speculation about artificial intelligence and legal reasoning. *Stanford Law Review*, *23*(1): 40–62, pp. 46–47; Gardner, A. (1987). *An Artificial Intelligence Approach to Legal Reasoning*. Cambridge, MA: The MIT Press, pp. 1–4; Rissland, E. L. (1988). Artificial intelligence and legal reasoning: A discussion of the field & Gardner's book. *AI Magazine*, *9*(3): 45–55, pp. 45–46; Verheij, B. (2020). Artificial intelligence as law. *Artificial Intelligence and Law*, *28*: 181–206, pp. 187–188.

[27] Ashley, K. D. (1990). *Modeling Legal Argument: Reasoning with Cases and Hypotheticals*. Cambridge, MA: The MIT Press; Ashley, K. D. & Rissland, E. L. (2003). Law, learning and representation. *Artificial Intelligence*, *150*: 17–58, pp. 17–18; McCarty, L. T. (1990). Artificial intelligence and law: How to get there from here. *Ratio Juris*, *3*(2): 189–200, pp. 193–194; Rissland, E. L., Ashley, K. D. & Loui, R. P. (2003). AI and law: A fruitful synergy. *Artificial Intelligence*, *150*(1–2): 1–15, pp. 1–2.

analyzing legal texts enable new tools for legal practice using computational models of legal reasoning and argumentation developed by *AI & Law* researchers. The main objective of much of the research in *AI & Law* has been to develop *CMLRs* that can make legal arguments and use them to predict the outcomes of legal disputes'[28]. A vast majority of the investigations on *AI & Law* are oriented toward the development of '*practical systems*' and only a small group of researchers are primarily interested in '*theoretical questions*'[29]. Overall, *AI and Law* is an intertwined research field and is uniquely positioned to integrate the *alpha*, *beta*, and *gamma* side of science, which corresponds roughly to humanities, experimental sciences, and social sciences. *AI & Law* benefits from the interdisciplinary aspects of different kinds of systems investigated: *theoretical systems* (e.g., mathematics and legal theory), *artificial systems* (e.g., software and statutes), and *natural systems* (e.g., human intelligence and the practices of law)[30].

The theory–practice gap in the *AI*-legal positivism landscape[31] can be filled with the applications of two theses[32] (i.e., the *normativity thesis*: separability of law and fact, and the *reductive thesis*: inseparability of law and fact) in *AI & Law* and *AI & Rule of Law*. However, *AI interdisciplinarity* in the framework of '*AI & Rule of Law*' is a complex issue to argue due to the reason that the '*Rule of Law*' stands in between 'law

[28] Ashley, K. D. (2017). *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age*. (1st edition) Cambridge: CUP, pp. 3–4.

[29] McCarty, L. T. (1990). Artificial intelligence and law: How to get there from here. *Ratio Juris*, *3*(2): 189–200, pp. 190–193.

[30] Bench-Capon, T., Araszkiewicz, M., Ashley, K. et al. (2012). A history of AI and law in 50 papers: 25 years of the international conference on AI and law. *Artificial Intelligence and Law*, *20*: 215–319, pp. 308.

[31] Juškevičiūtė-Vilienė, A. (2024). Legal positivism, AI, and the modern legal landscape: Challenges in education, research, and practice. *Acta Universitatis Lodziensis. Folia Iuridica*, *109*: 25–41, pp. 28–29.

[32] From the *normativity thesis viewpoint*, *AI & Law* can be advanced through *Kelsen*'s arguments in which *AI* technologies and applications sterilize and enforce the technical aspects of law and contribute to the development of theoretical, artificial, and natural systems. Moreover, *à la Kelsen* precise distinction of '*AI & Law*' in *AI*-legal positivism landscape will enable legal context to become much more purified from complex transdisciplinary approaches and strictly bound on mechanistic aspect of *AI* tools for legal practice. From the *reductive thesis* point of view, '*AI & Rule of Law*' will encourage inter-/intra- disciplinary perspectives to develop knowledge production process.

as a science' (e.g., empirical law, computational law, etc.)' and 'justice' (*Aristotelian* virtue of justice and virtue of ethics, etc.).

LegalTech has a significant influence on *AI & Law* and *AI & Rule of Law* or vice versa. In the context of *AI* interdisciplinarity, this relationship interacts with legal practice, cognitive science, and legal theory and doctrine[33]. *LegalTech* fits well with *AI* interdisciplinarity because it improves the legal system for a broad diversified group—i.e., the general public, lawyers, the judiciary, etc.[34]

Consequently, there has been an increase in the exchange between *AI & Law* on the one hand, and *LegalTech* (and *AI & Rule of Law*) on the other hand, however, the increase has not been tremendous. The Legal Innovation & Technology Lab (LIT Lab) at Suffolk University Law School conducts *AI* projects that are relevant to *AI and Rule of Law*. Recently, Suffolk University Law School has launched an innovative online platform that allows users to practice their negotiation skills with *AI* bots that talk back. Unlike typical *AI* assistants that tend to be extremely accommodating, Suffolk's new tool presents users with *AI* negotiators that are programmed to employ a variety of tactics and strategies used by experienced lawyers[35].

1.2 *AI Interdisciplinarity* and the Rule of Law

There is rapidly growing literature on *AI & Rule of Law* prioritizing the adjudication. Lon L. Fuller asserted that adjudication default as an ordering principle if the established rules are insufficient to cover the area of possible controversy. He highlighted two approaches to adjudication: 'First rules, then courts (*civil law legal system*)', and 'first courts, then rules (*common law legal system*)'[36]. Courts deliver justice in accordance

[33] Araszkiewicz, M. (2021). Computational legal problem solving: What can legal tech learn from AI and law research, and beyond? In: Szostek, D. & Załucki, M. (eds.) *Legal Tech: Information Technology Tools in the Administration of Justice* (pp. 101–127). Baden-Baden: Nomos, pp. 126–127.

[34] Hartung, M., Bues, M. M. & Halbleib, G. (eds.) (2018). *Legal Tech: How Technology is Changing the Legal World—A Practitioner's Guide*. München: Beck, p. v.

[35] The Legal Innovation & Technology Lab (LIT Lab), Suffolk University Law School (2025). Digital dealmakers: Suffolk Law's new AI platform challenges student negotiators. Boston: Suffolk University.

[36] Fuller, L. L. (1960). Adjudication and the rule of law. *Proceedings of the American Society of International Law at Its Annual Meeting (1921–1969)*, *54*: 1–8, p. 6.

with the rule of law. Courts' prescriptions have shaped how technology can be used, and ethical rules impose a duty to the courts and the administration of justice. In this context, lawyers play a societal or structural role in upholding the rule of law. Thus, the use of *AI* and lawyers' ethical obligations interact symbiotically[37]. The use of *AI* to assist decisions made in the exercise of power by states increased discussion of *AI & Rule of Law*[38]. Frazier asserted that the 'rule of law[39]' is not self-sustaining, and society demands a more interdisciplinary legal system. Public authorities may undermine the rule-of-law principle when they implement and enforce the law through algorithmic regulation. The rule of law is a core interest of societies and individuals in constitutional democracies, and any adverse impact thereon can be conceptualized as harm on societies/individuals[40].

Interdisciplinary approaches to *AI & Rule of Law* will reform the (algorithmic) adjudication of disputes related to *AI* and emerging new technologies and create a more reliable and accurate body of law in furtherance of the rule of law[41]. *AI & Rule of Law* scrutinizes *AI* tools (e.g., *ML* tools) applied in the pre-adjudicative phase of enforcing of the laws and during legal adjudication phase, and measures the impacts on fairness, transparency, compliance with the rule of law, and equity

[37] Legg, M. & Bell, F. (2020). *Artificial Intelligence and the Legal Profession*. Oxford: Bloomsbury, pp. 9–10.

[38] Burgess, P. (2022). The Rule of Law, Science Fiction and Fears of Artificial Intelligence. *Law, Technology and Humans*, *4*(2): 124–136, pp. 124–125.

[39] For historical evolution of the ambiguous concept of the 'rule of law', *See* Dicey, A. V. (1915). *Introduction to the Study of the Law of the Constitution*. London: Macmillan; Bingham, L. (2007). The rule of law. *Cambridge Law Journal*, *66*(1): 67–85; Venice Commission (2011). Report on the rule of law. Study No. 512/2009, Strasbourg: Venice Commission; Bingham, T. (2011). *The Rule of Law*. London: Penguin Books; Dworkin, R. (2013). The rule of law. *Law of Ukraine*, *2013*(4): 7–13; Venice Commission (2016). Rule of law checklist. Strasbourg: Venice Commission.

[40] Smuha, N. A. (2024). *Algorithmic Rule by Law: How Algorithmic Regulation in the Public Sector Erodes the Rule of Law*. Cambridge: CUP, p. 9.

[41] Frazier, K. (2023). A different alignment problem: AI, the rule of law, and outdated legal institutions and practices. *Journal of Business & Technology Law*, *19*(2): 331–372, pp. 331–332.