TÜBA
Türkiye Bilimler Akademisi
Turkish Academy of Sciences

ARTIFICIAL INTELLIGENCE LAW
&
DIGITALISATION IN LAW

TÜRKİYE BİLİMLER AKADEMİSİ
TURKISH ACADEMY OF SCIENCES

ARTIFICIAL INTELLIGENCE LAW AND DIGITALISATION IN LAW

Edited by
Assoc. Prof. Dr. Sinan OKUR

December 2025

Artificial Intelligence Law And Digitalisation In Law

© Turkish Academy of Sciences Publication, 2025

Science and Thought Series No: 65
ISBN : 978-625-6110-66-3
DOI : 10.53478/TUBA.978-625-6110-66-3

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Edited by
Assoc. Prof. Dr. Sinan OKUR

Secretariat
Gökçen ORAL
Büşra SÖZEN

Graphic Designer
Mustafa ALTINTEPE

Publication Place – Date – Pcs.
Tek Ses Ofset Matbaacılık Yayıncılık Org. San. Ve Tic. Ltd. Şti. S.N.: 44186 • Ankara, 2025 • 500

Turkish Academy of Sciences
Vedat Dalokay Cad. No: 112 06670 Çankaya – Ankara – Türkiye
Tel: +90 312 442 29 03 • www.tuba.gov.tr

Artificial Intelligence Law and Digitalisation in Law/ ed. Sinan Okur. -- Ankara: Turkish Academy of Sciences, 2025.
264 p. : tabl. ; 20 x 26 cm. – (Science and Thought Series; 65)
Includes bibliography and index.
ISBN 978-625-6110-66-3
1.Artificial intelligence — law and legislation. 2. Yapay zekâ — hukuki yönler. 3. Digitalization in law. 4. Hukukta dijitalleşme. 5. Artificial intelligence law. 6. Yapay zekâ hukuku. 7. Digital technologies — legal regulation. 8. Dijital teknolojiler — hukuki düzenleme.

K564.A78 Y37 2025
340.0285

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FOREWORD

Artificial intelligence has become one of the defining scientific and technological forces of our time. Its rapid development and widespread application are transforming not only production processes and public services, but also the legal, institutional, and normative frameworks that structure modern societies. As artificial intelligence systems increasingly shape decision-making in sensitive domains, the need for systematic and principled legal reflection has become both evident and urgent.

This volume brings together a collection of scholarly studies that examine artificial intelligence from a legal and regulatory perspective. The chapters address a broad range of issues arising from the interaction between AI technologies and law, including responsibility and liability, fundamental rights, governance mechanisms, and sector-specific regulatory challenges. Rather than focusing on technological innovation alone, the contributions in this book emphasize the necessity of aligning technological progress with legal certainty, accountability, and the protection of human dignity.

A notable feature of the volume is its engagement with contemporary regulatory developments from a comparative perspective. Alongside analyses grounded in European regulatory approaches, several contributions engage with legal experiences and policy debates emerging from Türkiye and the United States. This comparative outlook reflects the global nature of artificial intelligence governance and highlights the importance of dialogue between different legal traditions and regulatory cultures. By bringing together perspectives from multiple jurisdictions, the volume contributes to a more comprehensive understanding of how AI regulation may evolve in a globally interconnected yet normatively diverse environment.

The Turkish Academy of Sciences (TÜBA), as a Türkiye-based institution with an international scientific vision, attaches great importance to research that addresses emerging technologies through a rigorous, critical, and forward-looking lens. In this respect, the present volume contributes to TÜBA's mission of promoting high-quality academic scholarship that not only responds to national needs, but also engages with global challenges. The studies collected in this book share a common aspiration: to contribute to the development of an artificial intelligence governance framework that serves humanity, safeguards fundamental values, and supports sustainable and responsible innovation. In doing so, the volume seeks to offer a reliable intellectual foundation for policymakers who are tasked with designing and implementing legal and regulatory responses to rapidly evolving AI technologies.

It is my hope that this publication will serve as a valuable reference for researchers, practitioners, policymakers, and decision-makers interested in the governance of artificial intelligence, and that it will encourage further academic work at the intersection of law and emerging technologies.

I would like to thank the editors and authors for their contributions and for their commitment to advancing scientific knowledge in this important area.

Prof. Dr. Muzaffer Şeker
President
Turkish Academy of Sciences (TÜBA)
ORCID: 0000-0002-7829-3937

PREFACE

Today, it can be said without exaggeration that artificial intelligence has become a central agenda item across almost all branches of science. For this reason, for a considerable period of time, artificial intelligence has also constituted one of the main problems and core discussion topics for legal scholars. The reason for this is quite clear: artificial intelligence is not a phenomenon that affects only a specific field of law or, more precisely, merely a limited area of human life. On the contrary, it corresponds to a phenomenon that radically affects almost every domain of life and, consequently, of law, to such an extent that it calls into question the existence of profound structural transformations within these domains.

Put more explicitly, structural changes are occurring in nearly all areas of life; the activities of the human mind can today be imitated to a significant extent by artificial intelligence, and as a result of this imitation, certain activities that render human action meaningful can be carried out by artificial intelligence itself. Where such activities are performed by artificial intelligence, they inevitably fall within the direct sphere of interest of the law. In this context, law seeks to produce solutions to problems arising—or likely to arise—from activities conducted through artificial intelligence, including problems that have already materialized.

One of the most fundamental issues in the relationship between artificial intelligence and law is the following: artificial intelligence does not affect only a single area of life—for instance, it is not limited solely to justice services, education, or healthcare—but permeates numerous domains and is actively employed across them. From corporate activities to healthcare services, from justice and legal services to education, from innovation and industry to the infrastructural functions of everyday life, artificial intelligence exerts an extraordinarily broad and pervasive influence. It is therefore inevitable that a phenomenon affecting such a wide spectrum of human activity will have historically significant consequences for the legal systems that regulate these areas.

Indeed, we are currently witnessing a period in which nearly all branches of law are engaged in intensive debate over how these challenges should be addressed, during which intellectual deliberations are being conducted and codification efforts are being actively considered. In this respect, it is evident that the calls directed at legal scholarship and legal professionals are being renewed, and that law is being invited to reflect upon these problems and, where necessary, to resolve them through legislative action.

At this juncture, two principal approaches come to the fore. The first approach argues that these issues should be addressed without adopting an excessively rigid or restrictive legislative stance that would hinder the development of artificial intelligence or obstruct the progress it has already achieved. The second approach, by contrast, emphasizes the need for clear, binding, and normative rules, grounding its argument in the heightened importance attributed in the modern era to human existence, personality rights, and fundamental values.

In summary, artificial intelligence is generating profound changes across virtually all areas of life, and these changes inevitably and directly affect law, including the fundamental logic underlying legal regulation itself. In this context, the question of how the transformations brought about by artificial intelligence should be governed assumes central importance, particularly from the perspective of legal scholarship. For artificial intelligence does not merely affect specific fields of legal application; rather, it calls into question law itself and its foundational assumptions.

While in many other scientific disciplines the impact of artificial intelligence is discussed primarily in terms of integration, efficiency, or changes in modes of operation, the situation is considerably more complex where law is concerned. Beyond its practical applications—ranging from adjudicative processes to legal advisory services—artificial intelligence compels a re-examination of concepts such as privacy, the protection of personal data, responsibility, and even the codification paradigm that has shaped law for nearly two centuries. In this sense, artificial intelligence places law in the midst of a genuine conceptual crisis.

It is precisely at this point that it is appropriate to recall a well-known observation by Martin Heidegger in *Being and Time* (*Sein und Zeit*). According to Heidegger, the level of a science is determined by the extent to which it is capable of undergoing a crisis of its fundamental concepts. Viewed from this perspective, the crisis generated by artificial intelligence for law also reveals the capacity of modern law to re-examine its own conceptual foundations. How law responds to this crisis will therefore be decisive not only for the quality of artificial intelligence regulation but also for assessing the level of theoretical maturity attained by legal science itself.

Against this background, the European Union initially approached this crisis from the perspective of product safety and, by ultimately classifying artificial intelligence as a product, adopted Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence (*Artificial Intelligence Act – AI Act*). This Regulation, as part of the new product safety legislative framework, sets out in detail the minimum requirements that artificial intelligence systems must meet in order to be placed on the market.

By contrast, in the field of product liability—the complementary counterpart to product safety—there is, as yet, no binding regulation directly aimed at compensating damage caused by artificial intelligence. In this regard, particular attention should be drawn to the proposal for an AI Liability Directive, which was advanced by the European Commission on 28 September 2022. This proposal sought to adapt non-contractual civil liability rules to the challenges posed by artificial intelligence. However, in February 2024, the Commission formally withdrew the proposal as part of a broader regulatory refit process, following intense debate and fundamental disagreements among legislators and stakeholders over whether a new, autonomous liability model was necessary or if existing regimes could suffice This withdrawal constitutes one of the most tangible manifestations of the theoretical and normative divide between those who argue that existing liability regimes are sufficient and those who contend that a new and autonomous liability model is required to address risks arising from artificial intelligence.

Similar debates are being conducted intensively in many other areas of law, including constitutional law, criminal law (particularly with respect to fault and negligence), insurance law, and intellectual property law. Especially recent judicial decisions in the field of intellectual property law demonstrate with particular clarity that artificial intelligence necessitates a re-interpretation of law's core concepts.

Taken together, these developments reveal that a comprehensive wave of debate has swept across academia, compelling a rethinking of law's fundamental concepts and paradigms. It is precisely this context that has motivated the present work, which seeks to examine the crisis generated by artificial intelligence in law from the perspectives of different branches of law and different legal systems, thereby exploring the extent to which modern law is receptive to such crises. Although the contributors approach artificial intelligence from diverse viewpoints, it may nevertheless be said that they share a common understanding that artificial intelligence forces law to be reconsidered and that certain fundamental concepts require re-interpretation.

Finally, it should be noted that big data—one of the essential conditions underlying the advancement of artificial intelligence—simultaneously enables technological progress and poses serious risks to personality rights and fundamental rights. For this reason, the question of how legislators and legal professionals should respond to this crisis constitutes one of the central axes of the present work.

On this occasion, I would like to express my sincere gratitude to the scholars from different countries who contributed to this work, to the Turkish Academy of Sciences, and to Prof. Dr. Muzaffer Şeker for his dedicated support. I hope that this work will prove beneficial to all those engaged in this field.

Assoc. Prof. Dr. Sinan OKUR
Sakarya University
ORCID: 0000-0002-3772-9415

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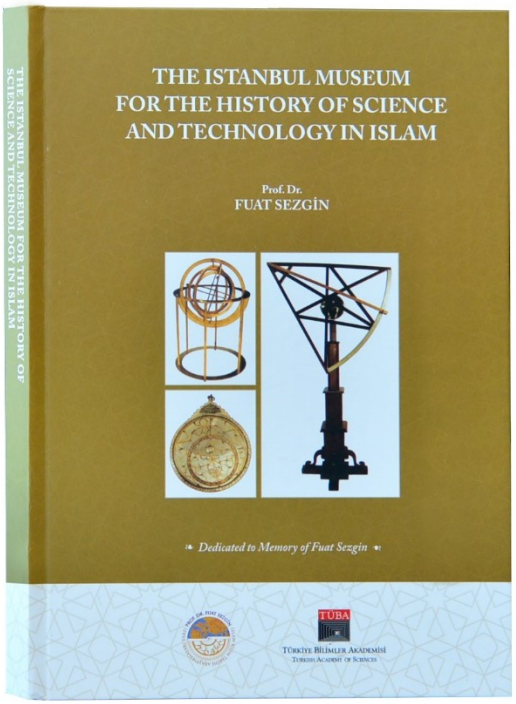
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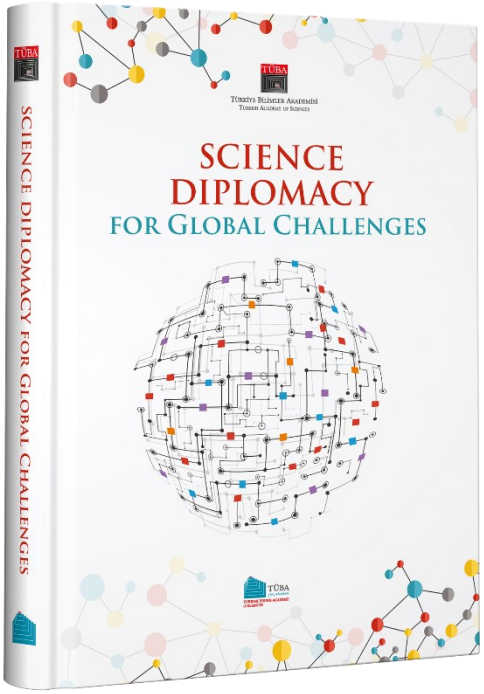
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