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

Full responsibility for the language, scientific content, ethical standards and legal aspects of all chapters in this book lies with the respective authors. The editors and the Turkish Academy of Sciences do not assume any responsibility in this regard.

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

This work is licensed under a Creative Commons Attribution-NonCommercial-No Derivative (BY -NC-ND) 4.0 International License.

CONTENTS

FOREWORD
MUZAFFER ŞEKER
v

PREFACE
SİNAN OKUR
vii

WHEN THE CURRICULUM VITAE MEETS THE ALGORITHM
ALISON LUI
1

THE USE OF AI SYSTEMS WITHIN THE CONTEXT OF THE OFFENCE OF CONDUCTING STATISTICAL ANALYSIS BASED ON THE IDENTITY OF JUDGES UNDER FRENCH LAW
MUSTAFA AKGÜN
25

THE LIABILITY MAZE IN AI-GENERATED INTELLECTUAL PROPERTY VIOLATIONS
MUHAMMED FURKAN AKINCI
39

PRODUCT LIABILITY INSURANCE NEW PATHS FOR SOFTWARE AND SYSTEMS OF ARTIFICIAL INTELLIGENCE FOLLOWING DIRECTIVE (EU) 2024/2853?
HELMUT HEİSS
69

ARTIFICIAL INTELLIGENCE SYSTEMS AS LEGAL ENTITIES - STILLBIRTH OR PREMATURE BIRTH OF THE "ELECTRONIC PERSON"?
MICHAEL MARTINEK
89

THE CERTIFICATION OF HIGH-RISK AI SYSTEMS
DIMITRIOS LINARDATOS
109

LEVERAGING AI IN TRACKING ILLICIT FINANCIAL FLOWS
UMUT TURKSEN
125

THE DIGITALISATION OF EUROPEAN CIVIL PROCEDURE – LESSONS FOR THIRD STATES?
JAN VON HEIN, PIA WOLF
157

THE FUNCTIONAL INTEGRATION BETWEEN EIDAS 2 AND THE AI ACT: AN INNOVATIVE SOLUTION FOR TRACEABILITY AND ACCOUNTABILITY IN THE ARTIFICIAL INTELLIGENCE VALUE CHAIN 185
RICCARDO DE CARIA, ALESSANDRO PIOVANO
183

HEALTHCARE UNDER THE EU AI ACT: RISKS, RIGHTS, AND RESPONSIBILITY IN EUROPEAN FRAMEWORK
SAMET TATAR
213

AUGMENTED JUSTICE: WHAT ROLE CAN AI PLAY IN JUDICIAL DECISION-MAKING?
SAMIR MERABET
235

INDEX
251

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

INDEX

A

accountability, 5, 7, 29, 37, 38, 47, 48, 59, 64, 67, 68, 70, 96, 98, 102, 109, 110, 131, 136, 137, 152, 153, 154, 156, 194, 202, 205, 207, 208, 210, 211, 212, 213, 214, 215, 216, 218, 219, 226, 227, 228, 230, 231, 232, 234, 236, 239, 240, 241, 242, 243

AI accountability framework, 198, 214

AI governance, 22, 53, 56, 60, 61, 62, 69, 112, 164, 194, 197, 208, 231, 236, 239, 243

AI software vendors' liability in discrimination, 3

AI training data, 48, 52, 54, 57, 61, 70

algorithmic accountability, 237

algorithmic bias, 3, 7, 11, 20, 203

algorithmic bias and discrimination, 3, 4, 7, 11, 20

anti-money laundering, 141, 142, 155, 156, 162

Article 25 AI Act, 199

artificial intelligence, 3, 5, 21, 22, 23, 30, 43, 44, 45, 47, 50, 53, 59, 67, 70, 71, 73, 76, 77, 78, 79, 80, 84, 85, 86, 87, 90, 91, 92, 96, 97, 98, 100, 107, 109, 110, 111, 112, 113, 120, 131, 132, 136, 137, 138, 139, 143, 151, 156, 158, 159, 161, 194, 195, 196, 197, 203, 217, 220, 221, 223, 236, 238, 242, 243, 244, 245, 249, 250, 251, 252, 253, 254, 256, 257, 258, 259, 261

artificial intelligence systems, 5, 8, 43, 77, 78, 79, 80, 84, 86, 249, 250, 251, 252, 253

automated decision-making, 3, 13, 17, 22

automated hiring systems, 3, 7, 8, 11, 20

automated screening tools, 11

B

black-box problem, 4

C

CE marking, 119, 124, 127

certification procedures, 119

certified digital traceability, 208

ChatGPT, 32, 34, 35, 55, 57, 249, 250, 251, 252, 253, 258

COM(2022) 496 final, 71

compliance, 25, 49, 51, 54, 62, 64, 65, 66, 67, 119, 124, 125, 126, 129, 130, 131, 132, 142, 156, 164, 170, 178, 196, 199, 200, 202, 204, 205, 206, 208, 210, 212, 213, 216, 217, 220, 226, 228, 229, 231, 236, 237, 238, 240, 241, 242, 243

conformity, 61, 89, 119, 120, 121, 124, 125, 126, 127, 128, 129, 131, 199, 204, 234, 235, 236, 237, 243

conformity assessment, 89, 119, 120, 121, 124, 125, 126, 128, 129, 131, 199, 204, 234, 235, 236, 237, 243

conformity assessment procedures, 121, 129

copyright infringement, 54, 57

cyber security requirements, 78

D

data governance, 152, 226, 228, 229, 230, 233, 234, 235, 237, 239

declaration of conformity, 119, 124, 126, 127

digital certification mechanisms, 214, 219

digitalisation of justice, 185

Directive (EU) 2024/2853, 76, 77, 92, 127, 196, 201

dynamic allocation of responsibility, 198

E

eIDAS 2 Regulation, 194, 197, 198, 209, 218

electronic attribute attestations, 194, 195, 198, 208, 211, 218

electronic personhood, 53, 109

EU product safety law, 119

European Digital Identity Wallet (EUDI Wallet), 194, 210

evidentiary integrity, 194, 198, 211

external conformity assessment, 119, 125, 128

external oversight, 131

F

fair use doctrine, 43, 46

financial crime investigation, 140, 149, 155, 160

fundamental rights, 5, 9, 30, 46, 98, 119, 120, 121, 122, 123, 124, 137, 152, 156, 157, 183, 194, 196, 201, 219, 226, 228, 230, 232, 238, 256

G

GDPR, 12, 13, 14, 17, 33, 39, 196, 201, 204, 210, 212, 214, 216, 220, 226, 227, 228, 229, 231, 243, 244

GDPR compliance, 212

Generative AI, 44

H

human oversight, 12, 45, 50, 154, 197, 200, 202, 204, 226, 228, 229, 230, 233, 234, 235, 237, 240, 241

human responsibility, 202

I

illicit financial flows, 136, 138

Industry 4.0, 96, 97, 99, 100, 101, 104, 107, 110, 112

Industry 5.0, 96, 100, 101, 102, 110

illicit financial flows, 136, 137, 150, 162

innovation, 5, 7, 22, 23, 25, 43, 46, 47, 49, 50, 51, 52, 56, 60, 61, 66, 67, 68, 69, 76, 78, 84, 88, 131, 154, 155, 156, 157, 194, 197, 205, 206, 211, 214, 218, 219, 223, 226, 228, 229, 230, 231, 233, 234, 235, 236, 238, 241, 242, 243, 244, 260

intellectual property law, 9, 43, 45, 48, 59, 67, 70, 73, 261

internal conformity assessment, 121, 124, 125, 128

J

judicial decision-making, 256

judicial independence, 29, 38, 256

M

medical devices, 239

multi-stakeholder responsibility, 43

N

non-material damage, 76, 80, 81, 82

notified bodies, 89, 119, 128, 236, 242

P

patient safety, 228, 230, 232, 234

personal data protection, 30, 32, 34

platform liability, 64

predictive justice, 39, 253

presumptions of causation, 194, 202, 206, 207, 208, 209, 211, 213, 215, 217, 218

product liability insurance, 76, 77, 78, 80, 81, 82, 83, 87

product liability law, 51, 105

pure economic loss, 80, 81

R

risk-based AI regulation, 244

risk-based regulation, 226

rule of law, 250, 254, 255, 259

S

suspicious transaction reports, 140

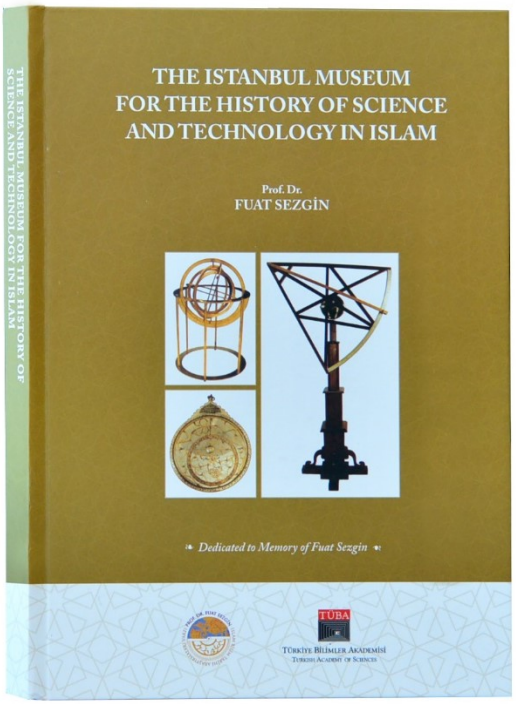
systemic cyber risk, 90

T

text and data mining, 43, 54, 55

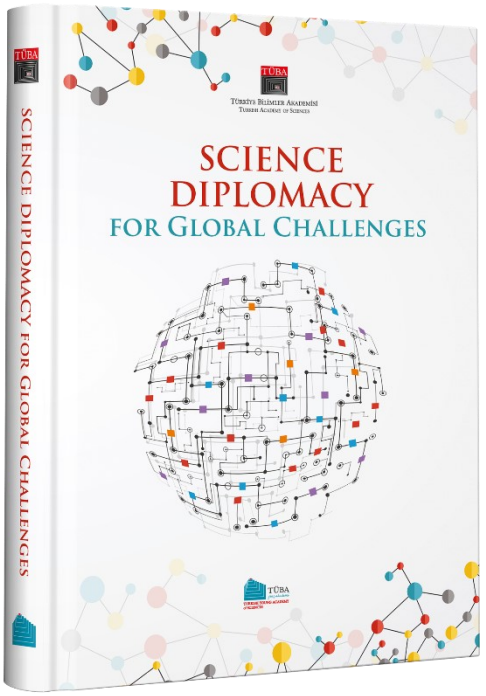
transparency, 3, 4, 7, 9, 12, 14, 18, 19, 20, 29, 30, 37, 38, 43, 46, 49, 51, 53, 70, 98, 104, 112, 131, 136, 137, 148, 152, 153, 156, 157, 197, 202, 210, 220, 226, 228, 229, 230, 231, 232, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 256, 258

transparency and explainability, 156


THE ISTANBUL MUSEUM FOR THE HISTORY OF SCIENCE AND TECHNOLOGY IN ISLAM
Prof. Dr.
FUAT SEZGİN
Dedicated to Memory of Fuat Sezgin
TÜBA
Türkiye Bilimler Akademisi
Turkish Academy of Sciences


TÜBA


TÜBA


SCIENCE DIPLOMACY FOR GLOBAL CHALLENGES
TÜBA
Türkiye Bilimler Akademisi
Turkish Academy of Sciences
SCIENCE
DIPLOMACY
FOR GLOBAL CHALLENGES
TÜBA

Artificial intelligence has emerged as a field of debate that compels many legal systems to address the challenges it raises simultaneously, to reconsider their existing conceptual frameworks, and—at least in certain respects—to engage with questions of a universal nature. In this sense, artificial intelligence currently constitutes one of the central items on the agenda of legal systems across the world. In responding to the problems it generates, legal systems develop solutions both within their own established legal traditions and through comparative engagement with other jurisdictions.

In an era characterised by the unprecedented acceleration of information flows and academic interaction—an acceleration to which artificial intelligence itself significantly contributes—legal systems increasingly interact with one another. Nevertheless, access to the solution approaches developed in different countries is not always sufficiently comprehensive or in-depth. Taking this situation into account, this volume brings together scholarly contributions by academics working at universities in different parts of the world, addressing various dimensions of artificial intelligence law.

The book covers a broad spectrum of issues, ranging from debates on the attribution of legal personality to artificial intelligence, to the use of artificial intelligence in recruitment processes, from challenges arising in insurance law to current discussions surrounding the European Union Artificial Intelligence Regulation. Through original assessments drawn from different legal systems, the work seeks to offer a modest contribution to the formation and shaping of universal values frequently emphasised in the context of artificial intelligence—particularly the principles of justice, reliability, and transparency.

TÜBA

Türkiye Bilimler Akademisi
Turkish Academy of Sciences

Vedat Dalokay Caddesi No: 112 Çankaya 06670 ANKARA
Telefon : +90 (312) 442 29 03 **Faks :** +90 (312) 442 72 36

www.tuba.gov.tr
TUBAakademi
TUBAakademi
TUBAGencakademi
Turkiyebilimlerakademisi

ISBN 978-625-6110-66-3