

DETAILED TABLE OF CONTENTS

<i>Leading Legal Disruption Editorial: A Vision for the Future of Artificial Intelligence</i>	1
I. Observing A Change	1
II. The Content of this Volume.....	3
III. Adapting Our Laws to AI.....	9
1. <i>Artificial Intelligence and (the Lack of) Security.....</i>	11
I. Introduction.....	11
II. Demystification of AI vocabulary	13
1. Artificial Intelligence	14
2. Machine Learning	15
i. Training and Inference	17
ii. Common Machine Learning Tasks.....	18
iii. Data Stationarity Assumption.....	19
iv. Sub-Banches of Machine Learning.....	19
3. Deep Learning and Artificial Neural Networks	21
4. Big Data	23
5. Legal Implications.....	23
III. Robustness Against Adversarial Attacks	25
1. Poisoning Attacks	26
2. Evasion Attacks.....	26
3. Phantom Attacks	27
4. Targeted vs. Untargeted Attacks	28
5. Transferability Principle	28
6. Mitigation.....	29
7. Legal Implications.....	29
IV. Privacy.....	30
1. Membership Inference.....	30
2. Model Inversion.....	32
3. Model Extraction.....	35
4. Mitigation.....	36
5. Legal Implications.....	38

Detailed Table of Contents

V.	Bias	39
1.	Garbage In = Garbage Out: Your Model is Only as Good as Your Data	41
2.	Mitigation.....	43
3.	Legal Implications.....	45
VI.	Explainability and Interpretability.....	45
1.	Mitigation.....	49
2.	Legal Implications.....	51
VII.	Autonomous Cars? Autonomous Software!.....	51
1.	Software Testing	52
2.	Concept Drift and Retraining	52
3.	Verification and Validation	53
4.	Legal Implications.....	53
VIII.	Conclusion.....	53
2.	<i>AI and Legal Scholarship: Reflections on Evolution and Influences</i>	57
I.	Abstract.....	57
II.	Introduction.....	58
III.	Legal Scholarship on AI and Its Influences	60
IV.	Three Traditional Areas of Inquiry	61
1.	AI in Legal Processes and Practice	61
2.	AI in Government and Administration	62
3.	AI and the Private Sector.....	63
V.	An Emerging Paradigm and Why It Matters.....	64
1.	AI Legal Scholarship and its Influences	64
2.	A New Paradigm of Critical AI Legal Scholarship	68
VI.	Conclusion.....	69
3.	<i>Intellectual Property Strategy for AI Technology in Canada</i>	71
I.	Overview.....	71
II.	IP Protection for AI Technology	71
1.	Scope, advantages and limitations of IP rights that protect AI technology	72
i.	Patents.....	72
(A)	Patent eligibility	73
a.	The US Position	75
(B)	Scope of Patent Protection for AI Technology	77
ii.	Copyright	77
(A)	Copyright Eligibility.....	77
(B)	Scope of Copyright Protection for AI Technology	79
iii.	Trade secrets.....	80
iv.	Industrial Designs	83

Detailed Table of Contents

	v.	Trademarks.....	84
2.	Considerations for machine generated works and inventions.....	84	
	i. Inventorship.....	85	
	ii. Authorship.....	86	
III.	Commercialization of AI Technology	87	
1.	Overview of IP commercialization for AI collaboration... 88	88	
2.	Collaboration to develop AI and commercialize IP rights.....	88	
3.	Commercial agreements	90	
IV.	Enforcement of IP Rights	93	
1.	Limitations of IP rights in the AI context	93	
2.	Layer IP rights with contractual rights	95	
V.	Conclusion	96	
4.	<i>Inventive Machines and Obvious(ness) Legal Disruptions</i>	97	
I.	Abstract.....	97	
II.	Introduction.....	97	
III.	Machine Intelligence in the Inventive Process	102	
1.	Automating and Augmenting Research	102	
2.	Timeline to the Creative Singularity	107	
3.	Inventive and Skilled Machines	109	
4.	Inventive Is the New Skilled.....	112	
5.	Skilled People Use Machines.....	113	
6.	The Evolving Standard	115	
IV.	A Post-Skilled World	115	
1.	Application	116	
2.	Reproducibility	119	
3.	An Economic vs. Cognitive Standard.....	121	
4.	Other Alternatives.....	123	
5.	Incentives Without Patents?	125	
6.	A Changing Innovation Landscape	127	
V.	Conclusion	128	
5.	<i>Legal Issues around Data Scraping as a Source of Data for AI Innovation</i>	129	
I.	Introduction.....	129	
II.	Web Scraping and its Alternatives.....	130	
III.	Who Scrapes Data and Why?.....	131	
IV.	Legal Issues with Web Scraping	133	
V.	Competition.....	133	
	1. Trespass to Chattels	135	
	2. Copyright	136	
	i. Technological Protection Measures	138	

Detailed Table of Contents

ii.	Text and Data Mining	140
3.	Contract Law.....	141
VI.	Privacy.....	142
VII.	Criminal Law.....	143
VIII.	Public Interest.....	144
IX.	Conclusion: Data Scraping and Ethical AI.....	144
6.	<i>Ethical Lawyering and Artificial Intelligence</i>	147
I.	Introduction.....	147
II.	A.I. and Ethics Frameworks	148
III.	Codes of Ethics in the Practice of Law.....	150
IV.	A.I. in the Practice of Law.....	150
V.	A.I.'s Implications for Legal Ethics	152
1.	Competence	153
2.	Duty to Communicate	154
3.	Duty to Charge Reasonable Fees and Disbursements....	155
4.	Duty of Confidentiality	156
5.	Obligations to Former Clients.....	157
6.	Unauthorized Practice of Law.....	158
VII.	Future Opportunities and Challenges	160
VIII.	Conclusion.....	162
7.	<i>Artificial Intelligence and Damages: Assessing Liability and Calculating Damages</i>	165
I.	Introduction.....	165
II.	Assessing Liability.....	167
1.	Potentially relevant existing liability regimes.....	167
i.	Tort Liability	168
ii.	Strict Liability.....	169
iii.	Product Liability	169
2.	Challenges and shortcomings	170
i.	High number of involved stakeholders	170
ii.	AI's increased autonomy.....	172
iii.	Lack of explainability (the “black box” phenomenon)	174
iv.	Lack of predictability or foreseeability	176
v.	Special considerations regarding product liability law	177
3.	Policy-driven solutions (<i>lege ferenda</i> solutions)	178
i.	Granting legal personality to AI.....	179
ii.	Creating a new form of strict liability for operators of high-risk technologies	180
iii.	Applying vicarious liability principles for operators of autonomous technologies	183

Detailed Table of Contents

iv.	Extending product liability to producers of emerging technologies (including services)	184
v.	Compulsory insurance schemes	185
4.	Developing the current fault liability regime (<i>legal lata</i> solutions)	187
	i. Enhanced duties of care	187
	ii. Solidarity rules between tortfeasors	189
III.	Calculating the Damages.....	191
1.	General Considerations.....	191
2.	Intellectual Property Right Infringements.....	192
3.	Privacy Violations.....	194
4.	Economic Methods and “Flat-rating” Damages	195
IV.	Conclusion.....	196
8.	<i>When AI Systems Are Negligent</i>	199
I.	Introduction.....	199
II.	Do AI Systems Owe a Duty of Care?.....	202
	1. Compensation to the Victim.....	204
	2. Deterrence	204
III.	How Can the Reasonableness of an AI System be Assessed?..	205
1.	Why the Reasonableness Analysis is Well-suited for AI Systems.....	205
	i. Lack of Explainability.....	206
	ii. Dynamic Nature	207
	iii. Delicate Balance between Advantages and Dangers	208
2.	The Challenges in Applying “Reasonableness” to AI Systems.....	209
3.	Proposed Reasonableness Assessment	210
IV.	Conclusion.....	211
9.	<i>Smarter Contracts: AI and Smart Contracts</i>	213
I.	Introduction.....	213
II.	Smart Contracts.....	215
III.	Smart Contract Risks.....	219
IV.	AI-Smart Contracts.....	222
V.	Risks of Using AI-Smart Contracts.....	223
VI.	Risk Management By Contract	227
VII.	Ethical Smart Contracts	230
VIII.	Conclusion.....	233
10.	<i>The Meeting of the New Minds: Contract Law, Intent and Artificial Intelligence</i>	235
I.	Contract Theory: Why Contract Law?	236

Detailed Table of Contents

II.	The Development of Artificial Intelligence and Contract Law.....	238
III.	Artificial Intelligence, Objective Theory and Human Autonomy: How to Keep the Dance Going.....	240
IV.	Conclusion.....	242
11.	<i>The Introduction of Medical Algorithms Into the Reimbursement Process: Incentivizing Industry-Payer Collaboration</i>	243
I.	Introduction.....	243
II.	What is Personalized Medicine?	246
III.	Single-Payer Health Care	247
IV.	The Interplay Between Pharma, Payers, and Regulators.....	250
V.	Intellectual Property in Pharmaceuticals.....	254
VI.	Case Study: Reslizumab	257
VII.	What Makes This Drug Novel?.....	258
VIII.	Potential Legal Hurdles of the Monopoly Extension Scenario	262
IX.	Conclusion	264
12.	<i>The Rise of FinTech: Promises, Perils, and Challenges</i>	267
I.	Abstract.....	267
II.	Introduction.....	267
III.	The FinTech Ecosystem: Key Characteristics	269
IV.	The Promises: The Transformative Potential of FinTech	273
1.	Decision-making Algorithms in Trading and Financial Advising	274
2.	Finance Platforms and Fundraising Mechanisms.....	275
3.	Payment Systems and Cryptocurrencies.....	277
V.	The Perils: New Sources of Risk	278
VI.	The Challenges: How Regulating FinTech is Different?.....	281
VII.	Conclusion	285
13.	<i>Identifying the Potential and Risks of AI Integration to Taxation: The Case of General Anti-Avoidance Rule</i>	287
I.	Introduction.....	287
II.	The Basic Functional Components of the GAAR and the Underlying Research Question	290
III.	The Core Functional Elements (Tests) of the GAAR and Their Importance for Modelling AI to be Integrated with the GAAR	292
1.	Brief analysis of the Three Tests under the GAAR.....	292
2.	Factors (Variables) Relevant to Evaluate Each Test	296
IV.	Proposing the Model of AI to be Integrated into the GAAR	298

Detailed Table of Contents

1.	Exemplifying the Correlations Between All Tests Under the ATAD's GAAR Via Fuzzy Logic.....	298
i.	The Authors' Work.....	301
2.	Model.....	302
V.	Legal Risks Stemming From the Integration of AI into the GAAR	307
VI.	Conclusions	310
14.	<i>Artificial Intelligence and Regulation</i>	315
I.	Introduction.....	315
II.	Using AI to Help Solve the Regulator's Problem	317
1.	Improving Compliance Through Better Targeting	318
2.	Improving the Content of Policies.....	319
3.	Improving Alignment Between Regulatory and Judicial Decisions.....	320
4.	Improving Consistency in Decision-making	320
III.	Risks and Limitations of Algorithms.....	321
1.	Algorithms Make Errors	321
i.	Mis-specification of objectives	322
ii.	The quality of the data	322
iii.	Actions and events can be difficult to predict using past data.....	323
iv.	The quality of the algorithm	324
2.	Algorithms Can be Costly to Create	324
3.	Algorithms May Have Unintended Consequences	325
IV.	Risks and Limitations of Humans Using Algorithms.....	325
1.	Converting Algorithmic Predictions Into Regulatory Decisions	325
2.	Reliance on Algorithmic Predictions	326
3.	Transparency of Regulatory Decisions	327
V.	Conclusion.....	328
15.	<i>Regulating Artificial Intelligence in the European Union</i>	329
I.	Introduction.....	329
II.	Regulatory Framework on AI in the European Union	333
1.	European Union Strategy on AI	334
2.	Ethics Guidelines for Trustworthy Artificial Intelligence	336
3.	EU White Paper on AI	337
III.	Artificial Intelligence and (Product) Liability from an EU Perspective.....	339
1.	The Application of the Product Liability Directive and AI.....	341
i.	Qualification of Software as a Product.....	341

Detailed Table of Contents

ii.	Concept of Defect	342
iii.	Putting the Product into Circulation	345
2.	Supranational Initiatives on Liability for Robots and Artificial Intelligence	345
i.	European Commission Initiatives	346
ii.	European Parliament	348
IV.	Concluding Remarks.....	350
16.	<i>Artificial Intelligence Governance and Policy: A Practical Guide to Identifying, Understanding, and Mitigating Legal Risks Associated With AI Integration</i>	353
I.	Introduction.....	353
II.	The Background and Real World Uses	354
III.	The ABA Model Rules of Professional Conduct	358
IV.	Appropriate Data Use	360
V.	Appropriate Processes.....	361
VI.	Appropriate Oversight	363
VII.	Analyzing Risk	365
VIII.	The Mitigation Plan	368
IX.	In Conclusion: Revisiting Hong Kong.....	370
17.	<i>Artificial Intelligence and Human Rights: A Contested Relationship</i> ..	373
I.	Introduction.....	373
II.	International Human Rights Law: Duties and Responsibilities	374
III.	Exploring the Relationship Between AI and Human Rights ...	377
1.	Algorithmic Bias	378
2.	The Right to Privacy.....	380
IV.	Creating Rights-Respecting AI	383
V.	Conclusion	385