

INDEX

Adversarial attacks, cybersecurity and

- evasion attacks, 26-27
- generally, 25
- legal implications, 29-30
- mitigation, 29
- phantom attacks, 27
- poisoning attacks, 26
- targeted vs untargeted attacks, 28
- transferability principle, 28

AI Terminology

- artificial intelligence, 14-15
 - Artificial General Intelligence (AGI), 105-107, 109, 114, 119
 - Artificial Super Intelligence (ASI), 105-107, 109
- big-data, 23, 272, 280
- deep learning, 21-22, 23
- artificial neural networks
 - model extraction, and, 35
 - synthetic data generation, 37
 - training, 72, 77
- machine learning, 15-21, 48-49 *see also* **Machine learning (ML)**

AI Systems

- Watson, IBM's AI system, 102-103, 105, 108, 111, 112, 117, 118, 120, 121, 330
- DeepMind, Google's AI system, 104-105, 109, 110, 117-119

Artificial Inventor Project, 85, 98

Bias

- algorithmic, 378-380
- garbage in = garbage out, 41-43
- generally, 39-41
- legal implications, 45
- mitigation, 43-45

Index

Black box, 5, 9, 28, 30, 31, 32, 33, 84, 94, 148, 154, 158, 162-163, 174-175, 241, 257, 261, 262, 264-265, 328, 340

Contract law

- AI development and, 238-239
- AI smart contracts
 - generally, 222-223
 - risks, 223-227
- contract theory, 236-238
- ethical smart contracts, 230-233
- generally, 235-236, 242
- objective theory, 240-242
- risk management by contract, 227-230
- risks, 219-222
- smart contracts, 213-219, 233

Copyright Act, see Intellectual property

Cybersecurity, see Security, lack of

Damages, calculation

- economic methods and “flat-rating” damages, 195-196
- generally, 191-192
- intellectual property right infringements, 192-194
- privacy violations, 194-195

Data scraping as data source for AI innovation

- competition
 - copyright, 136-141
 - generally, 133-135
 - trespass to chattels, 135
- contract law, 141
- criminal law, 143-144
- generally, 129, 144-145
- legal issues, 133
- privacy, 142-143
- public interest, 144
- web scraping and alternatives, 130-131
- who scrapes data, 131-132

Deep learning and artificial neural networks, see AI Terminology

Discrimination, see Bias in machine learning

Ethical lawyering and AI

- codes of ethics in practice of law, 150
- ethics frameworks, 148-150

Index

future opportunities and challenges, 160-162
generally, 147-148, 162-163
implications of AI for legal ethics
 competence, 153-154
 duty of confidentiality, 156-157
 duty to charge reasonable fees and disbursements, 155-156
 duty to communicate, 154-155
 generally, 152
 obligations to former clients, 157-158
 unauthorized practice of law, 158-160
practice of law, 150-152
legal profession, uses, 2-3
opportunities, 1-3

Explainability and interpretability

generally, 45-49
legal implications, 51
mitigation, 49-51

FinTech

decision-making algorithms in trading and financial advising, 274-275
defined, 269
finance platforms and fundraising mechanisms, 275-276
generally, 267-269, 285
key characteristics, 269-273
new sources of risk, 278-281
payment systems and cryptocurrencies, 277-278
regulation, 281-285

Fuzzy logic and general anti-avoidance rule, 295, 298-303, 305, 311, *see also*

Taxation, AI potential and risks

General anti-avoidance rule, *see* Taxation, AI potential and risks

Health care

generally, 243-246, 264-265
interplay between pharma, payers and regulators, 250-254
monopoly extension, 262-264
personalized medicine, 246-247
pharmaceuticals and intellectual property, 254-257
reslizumab, case study, 257-261
single-payer health care, 247-250

Human rights

generally, 373-374, 385
international human rights law, 374-377

Index

- relationship between AI, and
 - algorithmic bias, 378-380
 - generally, 377-378
 - right to privacy, 380-383
- rights-respecting AI, 383-385

Intellectual property

- copyright law
 - anti-circumvention provisions, 138-139
 - authorship, 86
 - computer program defined, 78
 - copyright eligibility, 77-78
 - reproduction right, 137
 - right of action on infringement, 93
 - Statutory Review of the *Copyright Act*, 87, 94-95
 - suggested changes, 94-95
 - term of monopoly, 77, 86
- commercialization of AI technology
 - collaboration to develop AI and commercialize IP rights, 88-90
 - commercial agreements, 90-93
 - generally, 87-88
- enforcement of IP rights
 - layering IP rights with contractual rights, 95-96
 - limitation of rights, 93-95
- generally, 71
- IP protection for AI technology
 - copyright, 77-80
 - generally, 71
 - industrial designs, 83
 - machine generated works and inventions
 - authorship, 86-87
 - generally, 84
 - inventorship, 85-86
 - patents, 72-77
 - trademarks, 84
 - trade secrets, 80-82
- patent law
 - generally, 72-73
 - inventive machines and obviousness
 - generally, 97-102, 128
 - inventive machine standard, 100-102, 115, 119
 - machine intelligence in inventive process
 - automating and augmenting research, 102-106
 - creative singularity, timeline to, 107-109

Index

- evolving standard, 115
- inventive and skilled machines, 109-111
- inventive machines vs skilled person, 112-113
- skilled people use machines, 113-115
- post-skilled world
 - application, 116-119
 - changing landscape, 12
 - economic vs cognitive standard, 121-123
 - generally, 115
 - incentives without patents, 125-127
 - other alternatives, 123-125
- inventorship, 85
- patent eligibility, 73
- right of action on infringement, 93
- reproducibility, 119-121

Legal risk, mitigation

- ABA Model Rules of Professional Conduct, 358-360
- analyzing risk, 365-368
- appropriate data use, 360-361
- appropriate oversight, 363-365
- appropriate processes, 361-363
- generally, 353-357, 370-371
- mitigation plan, 368-370

Legal scholarship

- AI defined, 60-61
- generally, 57-60, 69-70
- government and administration, 62-63
- legal processes and practice, 61-62
- paradigm
 - AI legal scholarship and its influences, 64-68
 - new paradigm of critical scholarship, 68-69
- private sector, 63-64

Liability and damages

- calculating damages
 - economic methods and “flat-rating” damages, 195-196
 - generally, 191-192
 - intellectual property right infringements, 192-194
 - privacy violations, 194-195
- challenges of assessing liability
 - AI’s increased autonomy, 172-174
 - high number of involved stakeholders, 170-172
 - lack of explainability (“black box” phenomenon), 174-175

Index

- lack of predictability or foreseeability, 176-177
- product liability law, special considerations, 177-178
- current fault liability regime, developing
 - enhanced duties of care, 187-189
 - solidarity rules between tortfeasors, 189-190
- generally, 165-167, 196-197
- negligence, AI systems
 - assessing reasonableness of AI system
 - challenges in applying reasonableness, 209-210
 - generally, 205
 - proposed reasonableness assessment, 210-211
 - why analysis is well-suited, 205-209
 - duty of care
 - compensation to victim, 204
 - deterrence, 204-205
 - generally, 202-204
 - generally, 199-202, 211-212
- policy-driven solutions
 - compulsory insurance schemes, 185-187
 - extending product liability to producers of emerging technologies, 184-185
 - generally, 178-179
 - granting legal personality to AI, 179-180
 - new form of strict liability for operators of high-risk technologies, 180-183
 - vicarious liability principles for operators of autonomous technologies, 183-184
- potentially relevant existing liability regimes
 - generally, 167-168
 - product liability, 169-170
 - strict liability, 169
- tort liability, 168
- Machine learning (ML)**
 - common tasks, 18-19
 - data stationarity assumption, 19
 - generally, 15-17
 - regulation, improving, 318-321
 - sub-branches of machine learning, 19-21
 - training and inference, 17-18
- Medical algorithms, *see* Healthcare**
- Mitigation, *see* Legal risk, mitigation**

Index

Model laws

American Bar Association Model Rules of Professional Conduct

- competence, 152, 153
- duty of confidentiality, 156
- duty to charge reasonable fees and disbursements, 155
- duty to communicate, 154
- obligations to former clients, 157
- unauthorized practice of law, 158

Federation of Law Societies of Canada (FLSC) Model Law

- competence and COVID-19, 153-154
- duty of confidentiality, 156
- duty to charge reasonable fees and disbursements, 155
- duty to communicate, 154
- generally, 150
- obligations to former clients, 157

***Patent Act*, see Intellectual Property**

Privacy

- legal implications, 38-39
- membership inference, 30-32
- mitigation, 36-38
- model extraction, 35
- model inversion, 32-35
- right to privacy, 380-383
- violations, 194-195
- web-scraping, and, 142-143

Regulation

- AI to solve the regulator's problem
 - generally, 317-318
 - improving alignment between regulatory and judicial decisions, 320
 - improving compliance through better targeting, 318-319
 - improving consistency in decision-making, 320-321
 - improving content of policies, 319-320
- European Union, generally, 329-333, 350-351
 - product liability
 - application of product liability directive and AI, 341-345
 - generally, 339-341
 - supranational initiatives on liability for robots and AI, 345-350
 - regulatory framework
 - ethics guidelines for trustworthy AI, 336-337
 - European Union strategy, 334-335
 - generally, 333-334

Index

- White Paper on AI, 337-339
- generally, 315-317, 328
- risks and limitations of algorithms
 - costly to create, 324-325
 - make errors, 321-324
 - unintended consequences, 325
- risks and limitations of humans using algorithms
 - converting algorithmic predictions into regulatory decisions, 325-326
 - reliance on algorithmic predictions, 326-327
 - transparency of regulatory decisions, 327-328

Security, lack of

- adversarial attacks, robustness against
 - evasion attacks, 26-27
 - generally, 25
 - legal implications, 29-30
 - mitigation, 29
 - phantom attacks, 27
 - poisoning attacks, 26
 - targeted vs untargeted attacks, 28
 - transferability principle, 28

AI vocabulary

- artificial intelligence, 14-15
- big data, 23
- deep learning and artificial neural networks, 21-22
- generally, 13-14
- legal implications, 23-24
- machine learning, 15-21
- generally, 53-55

Netflix Prize, 11-12

privacy

- legal implications, 38-39
- membership inference, 30-32
- mitigation, 36-38
- model extraction, 35
- model inversion, 32-35

recommender systems, 11-12

traditional software vs AI-based models

- concept drift and retraining, 52
- generally, 51
- legal implications, 53
- software testing, 52
- verification and validation, 53

vulnerability, 12-13

Index

Synthetic data, 37-38, 44

Taxation, AI potential and risks

general anti-avoidance rule

 fuzzy logic, 295, 298-303, 305, 311

 generally, 290-291

 three tests under, 292-295

 variables relevant to evaluate each test, 296-298

generally, 287-290, 310-313

model of AI to be integrated into GAAR

 generally, 298-307

 legal risks stemming from integration, 307-310