

INDEX

- access to government evidence and exculpatory technologies
 - robot-generated evidence, 142, 153–158
 - investigative technologies, 158
 - presumption in favor of open-source technologies, 157–158
 - pretrial disclosure requirements, 153–156
 - statutory privacy interests, 156–157
 - trade secret privilege, 156–157
- accessibility of robot-generated evidence, 168, 181–182, 191
- acts and omissions, 12, 358
- programmers' liability, 42
- actus reus*, 46
- attributing criminal liability, 346–349
- criminal liability, 76
 - autonomous vehicle-related crimes, 346–349
- hermeneutics of the situation, 336
- identification of, 352
- legal personhood, 348
- manslaughter (USA), 37
- programmers' liability, 26, 354
 - automated weapons-related war crimes, 38–40
 - autonomous vehicle-related crimes, 37–38
- voluntariness, 348–349
- admissibility requirements, 147–150, 173, 186
- computer simulations, 154
- adverse legal effects (EU law), 162
- agency and freedom to act. *See also* anthropomorphizing robots; autonomy narrative
 - autonomous vehicles and criminal liability, 346–349, 354
 - liberum arbitrium indifferentiae*, 347
- alcohol interlock devices, 14, 107
- algorithm and data-related risks
 - automated weapons systems, 32–34
- autonomous vehicles, 27–30, 339–341, 355
 - human input and cognitive biases, 121
 - market manipulation, 300
 - risk assessment models and recidivism, 243–244
- robot-assisted verdicts in criminal matters, 98
- robot-generated evidence, 124–125, 253
 - safeguards to minimize error and bias, 150–153
- algorithmic appreciation, 121, 124
- algorithmic aversion, 121
- algorithmic knowledge, 339–341
- allocation of liability, 25, 34–35, 42, 46, 120
 - driverless taxis, 137
- alternative dispute resolution, 97, 131–132
- analytical software tools
 - robot-generated evidence, 210–211, 213
- anthropomorphizing robots, 113–116. *See also* autonomy narrative
- appearance
 - interactive style, 119–120

- anthropomorphizing robots (cont.)
 - physical embodiment, 119–120
 - robot faces, 118–119
 - interactivity or animacy robots, 116–117
 - physical presence and physical embodiment, 117–118
- Artificial Intelligence Act (EU law), 75
- assumption of liability
 - (*Übernahmeverschulden*), 59
- attributing criminal liability
 - actus reus*, 346–349
 - mens rea*, 349–352
 - robots as criminals, 75–78
- automated data analysis, 248–249
- automated driving systems. *See* autonomous vehicles
- automated weapons systems, 5, 9
 - criminal liability
 - actus reus*, 38–40
 - crimes against persons under ICL, 26
 - programmer control, 32
 - algorithm and data-related risks, 32–34
 - risks outside, 35–36
 - user *versus*, 34–35
 - programmers' liability for harmful events, 12, 24–26
- automation bias, 30
- autonomous truck platooning, 325, 330, 331
- autonomous vehicles, 8
 - actual driver and legal driver, 344–346
 - criminal liability
 - actus reus*, 37–38, 346–349
 - mens rea*, 349–352
 - national criminal law, 26
 - human liability for foreseen but unavoidable harm, 15–16
 - narratives, 312
 - arguments, 313
 - Singapore government, 319–330
 - NTSB investigation, 134–136
 - programmer control, 27
 - algorithm and data-related risks, 27–30
 - risks outside, 31–32
 - user *versus*, 30–31
 - programmers' liability for harmful events, 12
 - public opinion and safety/security concerns, 317–318
- Singapore
 - benefits narrative, 319–321, 331
 - commercial narratives, 330–332
 - government's supportive role, 321–323
 - media coverage, 314–315, 318–319
 - public opinion studies, 314, 315–318
 - regulation and liability, 327–330
 - testing and trialing, 323–327
 - technology and narratology
 - connection, 342–346
 - users' liability for harmful events, 23–24
- autonomy narrative, 115, 281, 283, 291, 301, 306, 308
- autopilot systems
 - liability for harm caused by robots, 299, 344–345, 356
- biometric identifiers, 254
 - Law Enforcement Directive, 235
 - privacy concerns, 143
 - robot-generated evidence, 210, 215
- breath-alcohol machines
 - safeguards to minimize error and bias, 147–149, 156
- bystander behaviour
 - risks and failures outside of programmer control, 31, 32
- categorisation of data. *See* taxonomy of robot testimony
- causation, 11, 46
 - adequacy theories, 41
 - aggravation of risk, 42
 - but-for causation, 40–41
 - culpability assessments, 43
 - international criminal law
 - functional obligations, 42
 - “meaningful human control,” 44–46

- programming and harm, 12, 40
 - automated weapons systems, 26, 39–40
 - autonomous vehicles, 31–32, 37–38
 - but-for/*conditio sine qua non* test, 40–41
 - proximate cause test, 41
 - teleological theory, 42
- CE-certification marks
 - surgical robots, 68–70
- cell-phones. *See* mobile phone records
- Charter of Fundamental Rights of the EU, 103, 142
- circumstantial evidence, 94, 112
 - eyewitness testimony compared, 112, 128–130
- circumstantial information, 178–179, 185, 186, 190
- Code of Conduct of the Swiss Medical Association, 57
- cognitive biases. *See also* anthropomorphizing robots
 - eyewitness *versus* circumstantial evidence, 112, 128–130
- collisions at sea
 - liability for harm caused by robots, 299
- Comité Européen de Normalisation* (CEN), 223
- Comité Européen de Normalisation Électrotechnique* (CENELEC), 223
- communications failures
 - risks and failures outside of programmer control, 31–32
- communicative and expressive features
 - of criminal punishment, 19–20
- conditio sine qua non* test, 40–41
- connected devices, 205–207, 253, 262, 320. *See also* internet of things
- consumer products and forensic law enforcement technologies
 - distinguished, 197–198
- Convention on Cybercrime
 - 2001, 224
- corporate criminal liability for the harmful actions of robots
 - criminal liability of humans for harmful events involving robots, 14
 - criminal liability of robots, 86
 - legitimacy of, 81–83
 - parallels with, 77–78
 - regulation and limitation, 84–86
 - legitimacy of the general concept, 79–81
 - organizational negligence and inadequately trained surgeons, 64
 - robots responsibility distinguished, 78
 - United States, 77–78
- Court of Justice of the EU (CJEU), 103, 223
- crime detection
 - criminal procedure, 91–92
- criminal investigations, 92–93
 - function creep, 93–94
 - institutional safeguards, 96–97
- criminal justice and the use of robot-generated evidence, 91, 103–107, 109, 141–144, 248–249
- criminal law and criminal law theory, 5, 21
 - preventive dimension, 5–6
 - prevention of accidents, 7–9
 - suppression of conduct or products, 9–11
 - retrospective dimension, 6
 - criminal liability of humans for harmful events involving robots, 11–16
 - criminal liability of robots, 17–20
 - self-defence against robots, 17
- criminal liability of humans for harmful events involving robots, 6
- corporate liability, 14
 - foreseen but unavoidable harm, 15–16
- intent to commit a crime, 15
- manufacturers and programmers, 11–13
- supervisors and users, 13–14

- criminal liability of robots, 6, 17–18, 73–74
actus reus of robot activities, 76
 “attribution of freedom as a social fact,” 76–77
 corporate criminal
 responsibility, 86
 legitimacy of, 81–83
 parallels with, 77–78
 regulation and limitation, 84–86
 functions of criminal proceedings
 and punishments
 communicative and expressive
 features of criminal
 punishment, 19–20
 deterrence, 19
 legal personhood and AI devices, 74
mens rea of robot activities, 76
 criminal negligence, 55
 manufacturers’ liability, 135
 programmers’ liability, 43–44
 recklessness and carelessness, 350.
 See also recklessness
 users’ liability, 135
 criminal procedure
 detecting crime, 91–92
 predictive policing, 91–92
 reform relating to robot testimony,
 188–189
 criminal proceedings, 108–109
 institutional safeguards, 96–97
 investigations, 92–93
 function creep, 93–94
 risk assessment recommendation
 systems, 101–102
 robot-assisted verdicts, 97–99
 robots as defendants, 100–101
 Customs Information System, 224
 cybercrime, 224–225, 321
 data analysis
 automated data analysis, 248–249
 data collection, 247, 248
 Fourth Amendment standing,
 259–261
 General Data Protection
 Regulation, 231
 data evaluation, 247, 248
 data processing, 94, 247, 248
 analytical software, 213
 automated processing, 162
 General Data Protection Regulation,
 221–223, 230–231
 Law Enforcement Directive, 232–237
 Data Protection Directive
 (EU), 103, 230
 Data Storage System for Automated
 Driving (DSSAD), 170, 181, 185
 data storage/retention, 143, 170,
 181–182, 247
 deception and deceiving robots,
 296–297
 defence rights, 99–100, 142, 174
 due process, 158, 194, 195–196
 equality of arms, 227, 233, 240–241,
 243, 248–249, 250
 presumption of innocence, 97, 194,
 227, 335
 privilege against
 self-incrimination, 227
 robot-generated evidence, 15–16,
 186–187, 193–197
 Denmark
 historical call data records
 function creep, 94
 deterrence, 19
 digital evidence, 193–194. *See also*
 robot testimony at criminal
 trials
 access and testing robot
 testimony, 95
 access to government evidence and
 exculpatory technologies, 142,
 153–158
 accuracy, 138
 analytical software tools, 210–211
 biometric identifiers, 210
 challenging algorithms, 124–125
 circumstantial
 information, 178–179
 court expertise, 249
 creation of data
 identity of creator, 213–214
 permissions, 214–215
 purpose of creation, 214
 cross-examination, 124

- defense's use of digital evidence, 194–196
- electronic communications and social media, 201–203
- endurance/resilience of data, 215
- evaluative data, 177–178
- factfinding processes, 142, 160–164
 - automation complacency, 163
 - consistency with principles of human-delivered justice, 163–164
 - human safety valves, incorporation of, 161–163
- GPS chips, 253
- growing importance, 239
- information content, 179–180
- internet of things and smart tools, 205–207
- interpretation of data, 215–217
- legal restrictions limiting access or use, 218
- location data, 198–201
- measurement data, 176–177
- ownership and possession of data, 212–213
- privacy implications, 217–218
- raw data, 175–176
- reliability of evidence, 198
- reliability of robot memory, 125–128
- right of contestation, 142, 158–160
- robot-generated evidence
 - Fourth Amendment standing, 260–261
- safeguards to minimize error and bias, 142, 144–153
- search histories, 204
- smart tools, 205–207
 - Fourth Amendment standing, 260–261
- supportive defense evidence, 194
- surveillance tools, 207–209
- trustworthiness, 189–190
- vendor records, 204
- distribution of responsibilities. *See* allocation of liability
- DNA evidence, 93, 128, 165, 197, 210
 - analytical software tools, 211
 - supportive defense evidence, 194
- dolus eventualis*, 44, 339, 350, 352, 355
 - criminal liability, 350–352, 353
 - intention and negligence, 351
 - war crimes, 44
- doorbell-cameras, 197, 208
 - connected devices, 262
 - robot-generated evidence, 260–261
- driving assistants
 - robot-generated evidence, 167–168
- drones. *See* automated weapons systems
- drowsiness detection, 107
 - driving assistant alerts, 167–168
- forensic evidence generated by robots, 169–170
- function creep, 94
- due diligence
 - legitimate expectation, 50, 66, 68
 - negligence, 13
 - risk principle, 54–55
 - robot-assisted surgery, 58–59
 - certified for trust, 68–70
 - independent surgical robots, 61–64
 - remote-controlled robots, 60–61
 - robot warnings, 64–65
 - trust principle, 65–68
 - surgeons, 55–58
 - lex artis*, 56–57
 - robot-assisted surgery, 58–70
- due process, 194, 195–196. *See also* right to fair trial
 - defence rights, 158, 194, 195–196
- Dutch Code of Criminal Procedure, 225–229, 248
- duty of care
 - surgeons, 55–56
 - due diligence, 55–58
 - independent robots, 63–64
 - remote-controlled robots, 60–61
- e-Evidence Regulation (draft) (EU), 246
- electronic communications
 - robot-generated evidence, 201–203
- Enlightenment narrative, 341

- equality of arms, 240–241
 defence rights, 227, 233, 240–241, 243, 248–249, 250
- Erklären-Verstehen* controversy, 342
- EU law
 adverse legal effects, 162
 Charter of Fundamental Rights of the EU, 103, 142
 Data Protection Directive, 103, 230
 facial recognition, 105
 General Data Protection Regulation, 103, 222, 230–231, 247
 data collection, 231
 data processing, 221–223, 230–231
 Law Enforcement Directive, 222, 232, 247
 biometric identifiers, 235
 “competent authorities,” 232–233
 data processing, 232–237
 fair processing principles, 233–235
 implementation, 236
 protection of personal data, 233–235
 scope, 233
 sensitive data, 235
 processing data in criminal courts, 222–223
 surveillance state, fear of, 103–104
- Eurodac, 224
- Eurojust, 225
- European Convention on Human Rights (ECHR), 223
 right to fair trial, 195, 227, 233
 right to privacy, 103
- European Telecommunications Standards Institute, 223
- Europol, 225
- Eurosur, 225
- evaluative data, 177–178
- Event Data Recorders (EDRs)
 accessibility of data, 181
 traceability of data, 182
- evidence. *See also* digital evidence
 circumstantial evidence, 94, 112, 178–179, 185, 186, 190
 eyewitness testimony compared, 112, 128–130
 criminal justice and the use of
 robot-generated evidence, 91, 103–107, 109, 141–144, 248–249
- DNA evidence, 93, 128, 165, 197, 210
 analytical software tools, 211
 supportive defense evidence, 194
- mobile phone records, 194
- reliability of evidence, 242
 eyewitness testimony, 126, 128, 141, 145, 208
 Netherlands, 237, 240
 robot-generated evidence, 125–128, 198
- reproducibility of robot-generated evidence, 183
- robot testimony at criminal trials, 95
 accessibility of evidence, 181–182
 circumstantial information, 178–179
 evaluative data, 177–178
 evidentiary issues, 170–172
 forensic evidence generated by robots, 169–170
 information content, 179–180
 interpretation, 180, 181–182, 183–186
 measurement data, 176–177
 raw data, 175–176
 reproducibility, 183
 three-level approach, 183–186
 traceability and chain of custody, 182
 trustworthiness of robot testimony, 189–190
 vetting robot testimony, 186–187, 190–191
- rules of evidence
 Netherlands, 237
 Swiss Criminal Procedure Code, 173
 United States, 145–146
- safeguards to minimize error and bias
 admissibility requirements, 147–150
 algorithmic fairness, 150–153
 breath-alcohol machines, 147–149, 156

- robot-generated evidence, 142, 144–153
- witness testimony, 145–147
- standard of evidence
 - eyewitness testimony and circumstantial evidence compared, 112, 128–130
- strength of evidence
 - eyewitness testimony and circumstantial evidence compared, 112, 128–130
- traceability of robot-generated evidence, 182
 - chain of custody, 182
 - Event Data Recorders (EDRs), 182
 - “meaningful human control,” 45
- witness testimony
 - circumstantial evidence compared, 112, 128–130
 - importance, 239
 - safeguards, 145–147
 - standard of evidence, 112, 128–130
 - strength of evidence, 112, 128–130
 - unreliability, 126, 128, 141, 145, 208
- eyewitness testimony
 - circumstantial evidence compared, 112, 128–130
 - unreliability, 126, 128, 141, 145, 208
- facial recognition, 104–105, 210
 - analytical software tools, 211, 261
 - EU law, 105
 - international law, 105
 - racial biases, 125
- fact-finding processes
 - criminal proceedings, 92–93
 - expert witnesses, 172
 - National Transportation Safety Board, 132–134
- robot-generated evidence, 138–139, 142, 160–164
 - automation complacency, 163
 - consistency with principles of human-delivered justice, 163–164
 - human safety valves, incorporation of, 161–163
 - failure to correctly interpret or predict behaviour, 28–29, 32, 33–34, 74, 82–83, 135
- fair process
 - criminal proceedings, 96–97, 105–106, 174
 - proportionality, 106
 - transparency and accountability, 106
- First Additional Protocol to the Geneva Conventions, 26, 39–40
- fitness devices
 - robot-generated evidence, 206
- foreseeability of risk, 29–30, 34, 41–42, 44, 46, 352
- function creep, 93–94, 171
 - criminal investigations, 93–94
 - Denmark, 94
 - drowsiness detection, 94
 - historical call data records, 94
 - Denmark, 94
- functionality of robots
 - lex artis* principle, 56–57, 58–59, 64, 70
- Gefahrensatz* (risk principle), 54–55
- gender biases, 125, 151, 338
- gender equality
 - interests or rights of individual robots, 10
- General Data Protection Regulation (GDPR), 103, 222, 230–231, 247. *See also* EU law
- German Constitutional Court (*Bundesverfassungsgericht*)
 - fair process, 174
- Germany
 - causation
 - adequacy theories, 41
 - creation or aggravation of risk, 42
 - conditional intent, 14
 - corporate responsibility, 79–81
 - data storage duration, 234
 - Erklären-Verstehen* controversy, 342
 - fair process, 174
 - German Criminal Code (StGB), 21
 - dolus eventualis*, 44, 350–351

- Germany (cont.)
 intentional homicide, 38
 manslaughter, 38
gleichgültig, 351
 information content, 179
 Law Enforcement Directive,
 236–237
 no alternative harmless action, 16
 personal guilt, 18
 robot-generated evidence, 142, 189
 self-defence, 17
 tolerance of human
 imperfections, 21
- guilt
 attributing guilt to robots, 18, 81,
 100–101, 148
- hacking
 risks and failures outside of
 programmer control, 31–32,
 35, 321
- hermeneutics of the situation
actus reus, 336
 autonomous vehicles, 336–338
mens rea, 336
 outward and inward appearances of
 intention, 355–358
- historical call data records
 function creep, 94
- human superiority narrative, 283
- human values and morals
 interests or rights of individual
 robots, 10
- indiscriminate attacks
 war crimes
 automated weapons systems, 12,
 36, 38–39, 44
- information content, 179–180
- “input” attacks
 risks outside programmer
 control, 35
- integration of knowledge, 342–346
- intelligent speed assistance, 107
- intention, 15
 criminal liability, 349–352
 appearance and intention,
 356–358
dolus eventualis, 351
 harmful events involving
 robots, 15
- International Criminal
 Court (ICC), 26
- international criminal law
 automated weapons systems, 25, 26
 “meaningful human control,”
 44–46
 causation, 42
- international humanitarian law
 principle of distinction, 33
- International Organization for
 Standardization, 222
- internet of things, 311. *See also*
 connected devices
 robot-generated evidence,
 205–207, 253
- judicial regulation, 8
- Justice and Prosecution Data Act
 (Netherlands), 235
- Law Enforcement Directive (LED),
 222, 232, 247
 “competent authorities,” 232–233
 fair processing principles, 233–235
 implementation, 236
 protection of personal data,
 233–235
 scope, 233
 sensitive data, 235
- legal implementation of technology,
 339–342
- legal personality of robots, 101, 347
 criminal liability of robots, 74,
 348–349
- legal positivism, 341
- legislative regulation, 8
 soft law
 standards and guidelines, 8
- legitimate expectation
 due diligence, 50, 66, 68
- lex artis*, 56–57, 58–59, 64, 67, 70
- liability for harm caused by robots
 robots as criminals
 attributing responsibility,
 75–78

- robot responsibility and corporate responsibility distinguished, 78
- location data
 - robot-generated evidence, 198–201
- “machine as a mere tool” narrative, 288, 291, 296–298, 299, 301, 306
- machine-readable data, 175
 - evaluative data, 177–178
 - measurement data, 176–177
 - raw data, 175–176
- manslaughter
 - actus reus*, 37
 - autonomous vehicles
 - negligent manslaughter, 23, 26, 43–44
 - programmers’ liability, 37–38
 - mens rea*, 43–44
- manufacturers’ liability for harmful events involving robots, 11–13
 - autonomous vehicles, 135, 355
 - corporate criminal responsibility, 84–85
 - robot-assisted surgery, 63
- market manipulation
 - deception and deceiving robots, 296–297
- “meaningful human control,” 12, 44–46, 47
 - traceability, 45
- measurement data, 176–177
- Medical Professions Act (Switzerland), 57
- mens rea*, 43
 - attributing criminal liability, 349–352
 - criminal responsibility, 349
 - culpability, 349
 - dolus eventualis*, 44, 350–352
 - identification of, 352
 - indiscriminate attacks
 - recklessness, 44
 - programmers’ liability for harmful events, 43
 - automatic weapons systems, 44
 - autonomous vehicles, 43–44
 - purposely, knowingly, recklessly, and negligently, 349–352
- mobile phone records
 - evidence, as, 194
 - smartphone ruling (Netherlands), 227–229
- Model Penal Code (USA)
 - actus reus* of manslaughter, 37
 - culpability
 - recklessness/carelessness, 350
- narrative arguments and role of the government
 - community benefits of autonomous vehicles, 319–321
 - government support for autonomous vehicles, 321–323
 - regulation and liability, 327–330
 - testing and trialing autonomous vehicles, 323–327
- narratives regarding human-robot interaction, 281–284
 - autonomous vehicles, 333
 - benefits narrative, 331
 - commercial narrative, 330–332
 - commercial success, 330–331
 - inevitability narrative, 331–332
 - Singapore government narrative, 319–330
 - autonomy narrative, 115, 281, 283, 291, 301, 306, 308
 - context, 287–288
 - human superiority narrative, 283
 - “machine as a mere tool” narrative, 288, 291, 296–298, 299, 301, 306
 - narrative defined, 289–291
 - unproblematic sidekick
 - narrative, 283
- National Transportation Safety Board (NTSB), 132–134
- negligence, 11, 353
 - criminal liability, 349–352
 - dolus eventualis*, 351
 - due diligence, 13, 55–58
 - risk principle, 54–55
 - programming and harm, 12, 41
- negligent homicide
 - programmers’ liability, 37–38
 - mens rea* requirements, 43

- Netherlands
- criminal procedure law
 - digital forensics and cybercrime legislation, 224
 - Dutch Code of Criminal Procedure, 225–229
 - privacy and data protection law, 223
 - data processing in a criminal law context, 222–223
 - Justice and Prosecution Data Act, 235
 - legitimacy of evidence, 238
 - territorial jurisdiction, 239
 - Police Data Act, 235
 - reliability of evidence, 237
 - rules of evidence
 - establishing substantive truth, 237
 - smartphone ruling, 228–229
- Norway
- Robot Decision*, 288–289
- objective data, 245
- ownership of data
- robot-generated evidence, 212–213
- Police Data Act (Netherlands), 235
- possession of data
- robot-generated evidence, 212–213
- predictive policing
- criminal procedure, 91–92
- presumption of innocence, 97, 194
- defence rights, 97, 194, 227, 335
- pretrial disclosure requirements, 153–156, 194, 202
- prevention of accidents, 5. *See also* regulation of safety and risk
- criminal law and criminal law theory, 7–9
 - malfunctioning robots
 - regulation, 7–9
 - regulation, 7–9
 - regulation and liability, 327–330
 - regulation and limitation
 - corporate criminal responsibility, 84–86
- principle of distinction
- target identification, 33
- privacy
- data protection law, 107
 - expectation of privacy, 257
 - privacy as a personal good (US Const, 4th Amend), 256–261, 263–268
 - robot-generated evidence, 217–218
- privilege against self-incrimination
- defence rights, 227
- programmers' liability for harmful events, 11–13
- actus reus*, 26, 354
 - automated weapons systems, 12, 24–26
 - algorithm and data-related risks, 32–34
 - distribution of responsibilities, 34–35
 - risks outside programmer control, 35–36
 - autonomous vehicles, 12, 354
 - algorithm and data-related risks, 27–30
 - automation bias (programmers and users), 30–31
 - risks outside programmer control, 31–32
 - causation, 26
 - criminal negligence, 43–44
 - mens rea*, 43–44
- proximate cause test, 41
- Prüm Treaty, 224
- psychology of HRI in litigation
- anthropomorphizing robots, 113–116
 - appearance, 118–120
 - interactivity or animacy robots, 116–117
 - physical presence and physical embodiment, 117–118
 - cognitive biases, 120–121, 123–124
- impact
- appearance, 123
 - interactivity and animacy of robots, 122–123
 - physical presence and embodiment, 123

- public opinion and safety/security concerns
 - autonomous vehicles, 317–318
- quantity of data
 - automated search and analysis, 242–243
 - risk assessment models, 243
- racial biases, 125
- raw data, 175–176
- recidivism
 - risk assessment models, 243–244
- recklessness, 11, 14
 - criminal liability, 349–352, 355
 - appearance and recklessness, 356–358
 - programming and harm, 12, 41
 - war crimes, 44
- recognition of robots' rights, 10–11
- regulation of safety and risk. *See also* prevention of accidents
 - autonomous vehicles, 327–330
- regulatory offenses, 5
 - prevention of accidents, 7–9
- reliability of evidence, 242
 - eyewitness testimony, 128
 - Netherlands, 237, 240
 - robot-generated evidence, 125–128, 198
- remote harms to other human beings, 10
- remote-controlled robots
 - surgeon's liability for harmful events, 60–61
- reproducibility of robot-generated evidence, 183
- respondeat superior* principle, 77, 80, 82, 353
- right of contestation
 - robot-generated evidence, 142, 158–160
- right to be forgotten, 215
- right to bodily integrity, 8
- right to dignity, 10, 96, 142
- right to erasure, 215
- right to fair trial, 195. *See also* due process
 - right to life, 8
 - right to privacy, 103
 - right to property, 8
 - risk principle (*Gefahrensatz*), 54–55
 - Road Traffic Act (Netherlands), 335, 344–345, 356
 - Road Traffic Act (Singapore), 328
 - Road Traffic Act (Switzerland), 167
 - robo-judges, 97–99
 - Robot Decision* (Norway), 288–289, 291
 - Court of Appeal, 298–300
 - narratological analysis, 300–302
 - District Court judgment, 293–295
 - narratological analysis, 295–298
 - facts of the case, 291–292
 - legal causation, 293–294, 297–298, 299
 - market manipulation, 292–293
 - narratological analysis
 - Court of Appeal, 300–302
 - District Court judgment, 295–298
 - robot as stupid narrative, 295–297
 - Supreme Court, 305–306
 - Supreme Court, 302–305
 - narratological analysis, 305–306
 - robot defined, 1, 6–7
 - robot testimony at criminal trials, 95. *See also* digital evidence
 - circumstantial information, 178–179
 - evaluative data, 177–178
 - evidentiary issues, 170–172
 - forensic evidence generated by robots, 169–170
 - information content, 179–180
 - interpretation, 180
 - accessibility of evidence, 181–182
 - reproducibility, 183
 - three-level approach, 183–186
 - traceability and chain of custody, 182
 - measurement data, 176–177
 - raw data, 175–176
 - trustworthiness of robot testimony, 189–190
 - vetting robot testimony, 186–187, 190–191

- robot-assisted surgery
 - due diligence, 58–59
 - certified for trust, 68–70
 - independent surgical robots, 61–64
 - remote-controlled robots, 60–61
 - robot warnings, 64–65
 - trust principle, 65–68
- robot-generated evidence in litigation. *See* digital evidence; robot testimony at criminal trials
- robots, status of
 - Robot Decision*, 295–298
- robots as victims of crime, 6, 21
- Rome Statute, 26, 36, 39–40, 44

- safeguards to minimize error and bias
 - admissibility requirements, 147–150
 - algorithmic fairness, 150–153
 - robot-generated evidence, 142, 144–153
- Schengen Information System, 224
- search histories
 - robot-generated evidence, 204
- Securities Trading Act (Norway), 292
- self-defence against robots, 6, 17
- sex robots, 5, 10
- sexual offenses
 - human liability for the use of a robot, 15
- signal jamming
 - risks outside programmer control, 35
- simulation heuristic hypothesis, 112, 129
- Singapore
 - autonomous vehicles, 319–330
 - benefits narrative, 319–321, 331
 - commercial narratives, 330–332
 - government narrative, 319–330
 - government's supportive role, 321–323
 - media coverage, 314–315, 318–319
 - public opinion studies, 314, 315–318
 - regulation and liability, 327–330
 - testing and trialing, 323–327
- smart tools
 - digital evidence
 - Fourth Amendment standing, 260–261
 - GPS chips, 253
 - robot-generated evidence, 205–207
 - Smartphone ruling (Netherlands)
 - mobile phone records evidence, 227–229
 - social media
 - data ownership, 212
 - robot-generated evidence, 104, 195, 201–203, 217, 277
- soft law, 8
- standard of care, 12
- standard of evidence
 - eyewitness testimony and circumstantial evidence compared, 112, 128–130
- standing (US Const, 4th Amend)
 - challenges posed by emerging technologies, 265–268
 - exclusionary rule, 264–265
 - founding-era understandings, 264
 - privacy as a personal good, 256–261, 263–268
 - relationship with other Amendments, 263
- state agency requirement (US Const, 4th Amend), 261–262
 - founding-era understanding
 - warrant requirement, 269–270
 - private actor involvement, 269–274, 275–277
- status of robots
 - Robot Decision*, 295–298
- strength of evidence
 - eyewitness testimony and circumstantial evidence compared, 112, 128–130
 - objective data, 245
- supervisors' liability for harmful events involving robots, 13–14, 67
- surgeon's criminal liability for harmful events involving robots
 - due diligence, 50–51, 70
- surgical robots, 8, 70. *See also* robot-assisted surgery
 - definitions and terminology, 51–53

- independent surgical robots, 61–64
- remote-controlled robots, 60–61
- surveillance footage
 - privacy rights, 214
 - supportive defense evidence, 194, 197, 209
- surveillance state, fear of
 - EU law, 103–104
 - European Convention on Human Rights, 103
 - facial recognition, 104–105
 - US Constitution, 103
- surveillance tools
 - robot-generated evidence, 207–209
- Swiss Academy of Medical Sciences, 57
- Swiss criminal law
 - due diligence obligations, 53, 54–55
 - lex artis* principle, 59
 - negligence, 60
- Swiss Criminal Procedure Code
 - rules of evidence, 173
- target identification
 - principle of distinction, 33
- taxonomy of robot testimony
 - circumstantial information, 178–179
 - evaluative data, 95, 177–178
 - information content, 179–180
 - processed data, 95, 176–177
 - raw data, 95, 175–176
- technological neutrality, 188, 341
- territorial jurisdiction
 - digital evidence, 239
- Therapeutic Products Act (Switzerland), 59
- three-level approach to interpretation of evidence, 183–184
 - establishing element of the offense charged, 185–186
 - event under examination, 185
 - source of evidence, 184–185
- traceability of robot-generated evidence, 182
- trade secret privilege, 96, 148, 156–157, 172, 211, 218
- trust principle, 66
 - certification-based trust, 68–70
 - division of labour in surgery, 66–67
 - limitations, 66
 - surgical robots, application to, 67–68
 - task sharing among humans, 50, 66–67
- Übernahmeverschulden* (assumption of liability), 59
- United Nations Economic Commission for Europe (UNECE)
 - availability and accessibility of data, 181
- United Nations Institute for Disarmament Research (UNIDIR)
 - risks outside programmer control, 35–36
- United States
 - corporate criminal responsibility, 77–78, 79
 - Model Penal Code (USA)
 - actus reus* of manslaughter, 37
 - recklessness/carelessness, 350
 - rules of evidence, 145–146
- US Constitution
 - Fifth Amendment, 195, 263
 - Fourth Amendment, 103, 254, 277
 - privacy, 255
 - standing, 256–261, 263–268
 - state agency requirement, 255, 261–262
 - Sixth Amendment, 195, 263
 - compulsory process, 157
 - right of confrontation, 159
- users' liability for harmful events, 13–14
 - autonomous vehicles, 23–24, 135
 - automation bias, 30
- vendor records
 - robot-generated evidence, 204
- verdict accuracy, 145
- Vertrauensgrundsatz*. *See* trust principle
- Visa Information System, 224

war crimes

- automated weapons systems
 - directing attacks against civilians, 39
 - indiscriminate attacks, 12, 36, 38–39, 44
- automated weapons-related
 - actus reus*, 38–40
 - dolus eventualis*, 44

witness testimony

- eyewitness testimony
 - circumstantial evidence
 - compared, 112, 128–130
 - unreliability, 126, 128, 141, 145, 208
- importance, 239
- safeguards, 145–147
- standard of evidence, 112, 128–130
- strength of evidence, 112, 128–130