

Index

Page numbers in *italics* indicate photos or illustrations; page numbers followed by *t* indicate tables or charts.

A

- Adams, Douglas 59
AED (automatic electronic defibrillator) 79
AI. *See* artificial intelligence (AI)
AI systems. *See* artificial intelligence (AI) systems
analog computers 20
ancient legends and fables 19–23, 21, 22
androids 7, 69–72
Antikythera devices 20–21, 21
applied research 93–94
Arab myths 20–21
archeologists 20
art, computer-generated 43, 44
artificial arms 93
artificial intelligence (AI)
 benefits of 90–94
 current state of the art in 18–19, 74–75, 78
 dangers of 94–96
 defined 7
 ethical questions about 96–98
 expectations for 78–80
 history of. *See* history of artificial intelligence
 human intelligence merged with 93
 popularity of stories about 55–56
artificial intelligence (AI) systems, building and testing of 82–83
artificial senses 45–50, 75
Asimov, Isaac 59, 60, 61, 95, 97
automata 23
automatic electronic defibrillator (AED) 79
automatons 19
autonomous vehicles 80–84, 81

B

- Babbage, Charles 26, 27, 28
BabyBot robot 46
basic research 93–94
Battlestar Galactica 7, 70, 95
Bezalel, Loew ben 23
binary number system 24
Binet, Alfred 13
books
 Colossus (Jones) 62–64
 Frankenstein (Shelley) 56–58, 57, 59–60
 The Hitchhiker's Guide to the Galaxy (Adams) 59
 I, Robot (Asimov) 59
 The Moon is a Harsh Mistress (Heinlein) 61–62

- 2001: A Space Odyssey* (Clarke) 62, 63
 Borg (*Star Trek*) 55, 56, 64, 67
 brain. *See* human brain
 buildings, design of 92
 Butler, Samuel 28

C

- C3PO (android) 71, 71–72
calculus of reason 24, 26
Capek, Karel 58
cars, driverless 80–84, 81
chess games 86
Chinese myths 19
Clarke, Arthur C. 62
Clement, Joseph 27
Cold war 64
Colossus (Jones) 62–64, 95
Commander Data.
 See Data, Lieutenant Commander
computer-age, early AI research 28–32
computer-generated artistic activities 43, 44–45
computers
 analog 20
 benefits of 79, 90–94
 decision making by 12–15
 digital 30
 game-playing 86–87
 intelligence and 9–10
 intelligent, danger of 94–96
 sentience and 9

conceptual rules 45
 Cortés, Ulises 79
 creativity 40–45
 crisp logic 85, 88
 cyborgs 67, 95
 Cylons 7, 70, 72, 95

D

DARPA (Defense
 Advanced Research
 Projects Administration)
 83–84
 Data, Lieutenant
 Commander (*Star Trek*)
 7, 8, 69–70, 71–72
 data-mining software 78
 decision making 11–15,
 50–53
 decision trees 34
 Deep Blue (computer)
 86
 Defense Advanced
 Research Projects
 Administration (DARPA)
 83–84
 defibrillator, automatic
 electronic 79
 dendrites 16
 Descartes, Rene 24
 difference engines 26, 27
 digital computers 30
 “divine spark” 76–77
 driverless cars 80–84, 81

E

Egyptian myths 19
 electrocardiograms
 (EKGs) 79
 electromechanical parts
 28
 Enlightenment 23
 ethical questions 96–98
 expert systems 33, 35, 78

F

fables. *See* ancient legends
 and fables
 facial recognition 48–49
 films. *See* movies
 flexible programming
 88–89

Frankenstein (Shelley)
 56–58, 57, 59–60
 fuzzy logic 51–53, 85–88

G

game-playing computers
 86–87
 Golem of Prague 22, 23,
 56
 Google Driverless Car
 project 83
 Greek myths 19

H

HAL-9000 (fictional
 computer) 62, 63
 hardware 16, 30, 32, 75
 hearing, artificial 52, 93
 Heinlein, Robert A.
 61–62
 Hephaestus 19
 history of artificial
 intelligence
 ancient legends and
 fables 19–23, 21, 22
 current technology and
 18–19
 in early computer age
 28–32
 in Industrial Age 23–
 28, 27
 in understanding
 human thought
 32–36
*The Hitchhiker’s Guide to
 the Galaxy* (Adams) 59
 Hobbes, Thomas 24
 human brain
 information handling
 by 37
 memory capacity of
 75, 93
 merging with artificial
 intelligence 93
 neurons of 15–16
 sensory perception by
 48–49
 structure of 76–77, 77
 “human” rights for AIs 97
 human thought,
 understanding of 32–36
 hypotheses 32

I

I, Robot (Asimov) 59
 ibn Hayyan, Jabir 20
 Industrial Age 23–28, 27
 intelligence
 defined 9–10
 as human trait 18
 intelligence quotient (IQ)
 13
 intelligent robots 58–59
 IQ (intelligence quotient)
 test 13

J

Jazari, al- 20–21
Jeopardy! 86–87, 87
 Jews, robot defender of
 22, 23
 Jones, Dennis 62–64
 juries, AIs serving on 98

L

language 38
 Leibniz, Gottfried 24, 26
Leviathan (Hobbes) 24
 Lovelace, Ada 25, 26

M

machine intelligence,
 measurement of 14–15
 Mandelbrot set 43
 Marvin the Paranoid
 Android 59
Matrix trilogy 65, 67–69,
 68
 medical uses of computers
 79, 92
 Menabrea, Luigi 25
 microprocessors 75
 Middle Ages 23
 MIG car 81
 Mike (fictional computer)
 61–62
 military applications of
 driverless vehicles 80
*The Moon is a Harsh
 Mistress* (Heinlein)
 61–62
 morality 76
 Mount Olympus 19
 movies. *See* also *Star Trek
 Frankenstein* 57

Matrix trilogy 65,
67–69, 68
Star Wars 71, 71–72
Terminator series 7, 64,
65–67, 66
2001: A Space Odyssey
62, 63
music, computer-
generated 44
myths. *See* ancient legends
and fables

N

Nao Robots 74
neurons 15–16
Newton, Isaac 41
novels. *See* books

P

Picard, Jean-Luc 55
plays: *R.U.R.* (Capek) 58
Price, Derek de Solla 20
problem solving 10–11,
41–42, 44
programming. *See also*
software
flexible 88–89
random changes in
42–44
programming language,
first 26
prototypes 82
Pygmalion 19

Q

quantum computing 84,
85

R

R.U.R. (Capek) 58, 95
RABiT 46–47, 47
radio series: *The
Hitchhiker's Guide to the
Galaxy* (Adams) 59
random changes in
programs 42–44
Reber, Paul 75

Renaissance 23
reproduction of AIs 98
right and wrong, knowing
difference between 98
robots
artificial senses of
45–47
danger of 94–96
intelligent 58–59
origin of word 58
sentience and 9
tactile sensors in 45,
46

Rossum's Universal
Robots 58
rule breaking 41–42, 45

S

Schickard, Wilhelm 24
science fiction 7
scientific research,
computer use in 92–94
self-awareness 56, 61,
69, 78
senses, artificial 45–50,
75
sentience 8–9
Shelley, Mary 56–57,
59–60
Simon, Theodore 13
Skynet 7, 65–67
software 17, 31, 32, 75, 78.
See also programming
speech, computerized
52, 53
speech and speech
recognition 38–40, 53,
75
Stais, Valerios 20
Star Trek 7, 8, 55, 56, 64,
67, 69–70
Star Wars 71, 71–72
Stern, William 13
street-crossing problem
50–53
submarine baffle-clearing
patterns 11–12, 12*t*

T

T-800 (robot) 66
tactile sensors 45, 46
Telerobot 91
television series
Battlestar Galactica 70
*The Hitchhiker's Guide
to the Galaxy* 59
Star Trek 7, 8, 55, 56,
64, 67, 69–70
Terminator 7, 64,
65–67, 66, 95
Terminator 7, 64, 65–67,
66, 95
Three Laws of Robotics
(Asimov) 60
Turing, Alan 15, 28–30,
29
Turing machine 30
Turing test 15, 28,
30–31
2001: A Space Odyssey
(Clarke) 62, 63

V

vacuum tubes 28
vision
in animals 49–50
artificial 48–50, 93
von Neumann, John
31–32

W

walkers, intelligent 79
Watson (computer)
86–87, 87
wetware 31, 32
wheelchairs, intelligent 79
writing, computer-
generated 44–45, 91

Y

Yan Shi 19

Z

Zuse, Konrad 28–32