

# Index

- AAAdvantage , 11, 19  
abstraction respecialization:  
ads, 58-60, 62-63  
AES: SunAmerica's Appointment Expert  
System, 233  
AES, 233-235, 237, 239, 241-242  
AGATHA: An Integrated Expert System to  
Test and Diagnose Complex Personal  
Computer Boards, 87  
AGATHA, 87, 89, 91-93, 95-103  
Aion Corporation, 58  
AirBus, 22  
aircraft routing, 21, 24  
airlines scheduling, 21, 26, 28, 33, 35-37  
AL<sup>2</sup>X: An Expert System for Off-Site Evalu-  
ation of Commercial Bank Financial  
Stability, 243  
AL2X, 243-253  
algorithm, 30-32, 35, 43, 105, 112, 114,  
127, 155, 245, 273, 279, 355  
Allred, Daryl, 87  
American Airlines, 11, 18-19, 21, 26, 28,  
33, 35-37  
AMR Corporation:  
angiography, 106, 109, 115  
Angrisani, Frank, 233  
Anvil 1000, 162  
apical hypoperfusion, 110  
Apple Computer, 28-29, 33, 43-44  
Application of Artificial Intelligence in  
the Field of Chemical Regulation, 55  
appointment request, 233-237, 239-242  
ART, 8, 28, 162, 172, 217, 219, 226, 258,  
260, 286, 345, 347, 351  
ART-IM, 15, 240-241, 260-261, 265-266, 287  
assembly sequence, 135, 137, 144, 146,  
151, 155  
assembly system, 135-137, 139, 141, 143-  
145, 147-155  
assembly system synthesis, 137, 149, 152  
AT&T, 4, 7-9, 12-13, 15-19, 21-22, 25-26,  
29-33, 36-37, 39-45, 47-50, 56, 58, 60,  
62-64, 67-70, 73, 75, 77, 79-82, 87-88,  
90-94, 96, 98-103, 105-111, 113, 115,  
117-118, 121-122, 124, 127, 130-132,  
135-136, 144, 146, 151-155, 158-160,  
162, 164-165, 168, 172, 174, 176, 195-  
200, 202-212, 215-218, 221, 223-226,  
228-230, 234-237, 239-241, 244-253,  
256-259, 261-262, 264, 266-269, 272-  
273, 277, 279-280, 282, 284-287, 291-  
293, 295, 297-298, 301-302, 306, 311-  
314, 316-318, 322, 324-335, 338-340,  
345-346, 348-352, 354-355  
audit functions, 3-9, 255, 259, 263, 265,  
268, 322-323, 328, 330, 332-333, 338,  
341-342, 351-352  
AUTOCAD, 162, 165-168  
AutoLisp, 162  
automatic data collection, 196  
Automatic Letter Composition forcus-  
tomer Service, 67  
backtracking, 41, 350  
backward chaining, 60  
bank failures, 244

## 358 INDEX

- banking risk, 247
- Bartman-Gatt, Allyson, 321
- Beall, Gregory, 337
- Bennett, Mike, 87
- bilinear subtraction, 111
- blackboard, 71-73, 83
- Boeing Company, 22, 152
- Bratt, Steven, 337, 355
- Brown, Stuart, 121
- Business Credit Services, 255, 258-259
- Buta, Paul, 67, 75, 82
  
- C, 5-8, 11, 15, 21, 29, 36-37, 44, 67, 70, 73-76, 79, 82, 100-101, 103, 109, 114-115, 118, 122, 126, 128, 133, 135-137, 152-156, 157, 162, 166, 176, 197, 201, 204-205, 208, 211-212, 221-222, 235, 250, 255, 258-261, 264-266, 273, 276-277, 280, 282, 284, 295, 297, 299-300, 309, 314, 318, 339-340, 344-346, 348-349, 351-352, 354-355
- cable, 215, 220-222, 225-226, 228, 230
- cable facilities, 215, 220, 225, 228, 230
- cache bus, 87, 91, 93-95, 97, 101, 103
- CAD, 137, 152, 154, 162, 165, 167, 172, 174
- California Health & Welfare Agency, 321-327, 331, 335
- caltrec, 321, 323-335
- CAMES, 157-159, 161-163, 165-170, 172-176
- Campbell, Ian, 157
- CANASTA: The Crash Analysis Troubleshooting Assistant, 195
- CANASTA, 195-203, 205-212
- CANASTA-ULTRIX, 212
- capacity measures, 247
- case-based reasoning, 106-109, 111, 113-116, 118, 121, 123-133, 135, 138, 140, 147, 151, 153-154, 195, 197, 200, 202, 204-208, 211-212, 216-217, 220, 227-230, 234-237, 239-240, 255-256, 258-259, 263-265, 267-268, 272-273, 282, 284, 286-287, 292-295, 297-299, 301-303, 305-307, 309-314, 316-318
- case study, user, 26-34, 40-47, 50, 106-109, 112-116, 118, 136-140, 144-146, 149-151, 153, 217-220, 223-224, 229, 244, 247-252, 256-258, 263-265, 267-268, 293-295, 297-307, 309-314, 316-319
- Case-Based Reasoning Solution to the Problem of Redundant Resolutions of Nonconformances in
  - Large-Scale Manufacturing, 121
  - causal reasoning, 90-91, 95-96, 121, 123-124, 126, 128-133
  - CCH, 255-259, 261-267, 269
  - chemicals, 55-59, 61-64
  - chemicals, regulation of, 55, 57, 59, 61, 63-64
  - CLOS, 158, 160, 162, 168, 170
  - cobol, 59, 264-266
  - cognitive task analysis, 67, 70, 73-75, 77-78, 82, 136-137, 139, 144, 147-149, 151-152, 154-155, 271-277, 279-280, 282, 284, 286, 292-295, 297-301, 303, 305-308, 310, 312, 316-317, 319
  - Cognitive Systems, 67, 75, 77-78, 284
  - COIC, 297-299, 313-315
  - Commission Audit Knowledge Base, 3-9
  - Common Lisp, 24, 28-29, 31, 34, 42-45, 50, 113, 115, 158-160, 162, 166, 168, 170, 204, 206, 212, 218-219, 221, 226, 229, 345, 347, 351
  - computer-aided design:
    - computer-aided process planning, 150
  - CONDEV, 275-276, 278-280, 286
  - controllers, aircraft, 21-27, 30-37
  - COPE, 8, 225, 309-313, 316, 318-319
  - coronary artery disease, 105-107, 110, 115
  - corporate goals and strategies, 157-158
  - correspondence, 67-70, 76, 78-80, 82, 239
  - cost measures, 245
  - costing parameters, 31
  - crash analysis, 195-196, 199, 207, 211
  - credit analysis, 259, 269
  - Credit Clearing House, The, 255, 257, 259, 261, 263, 265, 267, 269
  - credit, 68-71, 73, 75-82, 251, 255-263, 265, 267-269, 271-273, 277, 282, 284-286
  - critic-based adaptation, 127, 130
  - Criticism-Based Knowledge Acquisition for Document Generation, 291
  - CRSAB, 215-216, 222, 229
  - CSC, 199-200, 206, 209-211
  - CSS, 339-341, 347, 351
  - CUBUS—An Assistant for Fundamental Corporate Analysis, 271
  - cubus, 271-287
  - cultural resistance, 246
  - customer needs, 46, 49, 56-59, 63, 67-72, 75-82, 158, 165-166, 170, 174, 195-202, 209, 211, 213, 215-216, 218, 220-222, 225-230, 255-259, 264, 266-267, 269

- customer premise equipment, 213, 215, 222, 225
- customer service, 18, 67-72, 75-82, 269
- customized letters, 67-68, 70-71, 75, 77-81
- DARPA, 124, 337-338, 351-353
- Dashiell, Fred, 337
- data processing, 3-5, 7-9, 11-19, 22-23, 27-31, 35, 40, 44-45, 49, 55, 57-58, 60-62, 64, 70-72, 75-76, 80-83, 87, 89-91, 93-96, 101, 108-109, 112, 116-118, 135, 137, 140, 148, 153, 196, 198-201, 207, 212, 216-217, 220, 223-224, 228-229, 233-235, 237, 239-242, 246-249, 252, 255-259, 261-263, 265-268, 273-274, 276-277, 280, 282, 284, 287, 292, 294-295, 298-299, 307-308, 314, 319, 321, 324, 327, 329-331, 333-335, 337-342, 344-355
- De Fazio, T. L., 135, 151, 154
- DEC, 207, 260, 264-265
- decision rules, 249, 261, 301, 311
- DECtree, 208
- default reasoning, 301
- Defense Advanced Research Projects Agency, *see* DARPA
- deregulation, 4, 246-247
- derivational adaptation, 127, 130
- Development of Syllabus—An Interactive, Constraint-Based, 39
- DFMA:
- diagnosis, 88, 90-91, 95, 101-103, 105-106, 108-109, 117, 216-217, 220, 224, 229-230
- differential analyzer, 310
- Digital Equipment Corporation, *see* DEC
- discriminator, 113
- double dispatches, 215
- Dun & Bradstreet, 255
- Ebersold, Brian, 11
- Edsall, A. C., 135
- engineering, 75, 77-78, 121, 123-124, 131, 135, 150-151, 154-155, 158-160, 164, 172, 174, 198, 210, 295, 319, 321, 327, 329, 335
- engineering knowledge, transfer of, 158-160, 164-165, 168, 170, 172, 174, 176, 321, 323, 325-330, 333, 335
- ESAL, 338, 340-345, 348-354
- Euchner, Jim, 213
- Evertsz, Rick, 39
- Expert Auditing System for Airline Passenger Tickets, 3
- expert system, 3, 7-9, 12-13, 15-19, 22, 58-59, 64, 71, 77, 87, 90, 103, 107-108, 112, 115, 146, 157-158, 160, 198, 212, 216-218, 227, 230, 233-235, 240, 242, 243-244, 251-252, 255, 257-260, 264-265, 268-269, 293, 310, 324-331, 334-335, 338
- Expert Systems in Data Processing: California Travel Expense Claim System, 321
- fabrication, 135
- false dispatches, 215, 217, 223-224
- fare audit, 3-9
- fare commission audit, 3-9
- Federal Deposit Insurance System, 244
- Flamholz, Jack, 213
- flight operations system:
- forecasting, 292, 295, 298, 303, 305-306, 308, 312
- Fortran, 345, 347, 351
- forward chaining, 220, 261, 346
- FOS, 22-25, 27-30, 34
- FOXGLOVE, 201, 206
- frequent flyer, 11-13, 15, 17-19
- fuzzy logic, 274, 276
- Golden Common Lisp, 160
- GoldWorks, 123, 160
- Grammatik, 76
- GSE, 339, 344, 347
- GSETT, 339-340, 344-345, 351-352, 354
- Gupta, Ajay, 87, 95, 103
- Gustavson, R. E., 135
- Hernandez, J. A., 135
- heuristics, 17, 19, 27, 32, 91, 144, 147, 151, 204, 207, 209, 274, 282, 291-293, 298, 315, 318, 340, 342-347, 349, 352, 354
- Hood, Steve, 157
- HP Labs, 87-88, 99-103
- Hutchins, P. M., 135
- HWDC, 324, 326-327, 329-332
- hypothesis generator, 346, 349
- I-DEAS, 118, 124, 137-138, 140, 160, 217, 286, 295, 312, 334, 353

## 360 INDEX

- IBM 3090, 15, 17, 58-59, 260-261, 264-265
- IBM PS2, 15, 17, 286-287
- IBM, 15, 17, 43-44, 58-59, 76, 128, 239, 260-261, 264-265, 286-287, 324, 326-327, 329
- ICBD, 99-101, 103
- ICG, 67, 71-82
- Inference, 8, 15, 28, 37, 71, 90-91, 100, 125, 196, 234, 240, 242, 258, 260, 286, 306, 310, 351, 354
- information inheritance, 67-69, 71-73, 76-77, 79
- information hiding, 300
- Informix, 158
- insurance, 233-237, 239-242, 244, 246
- IntelliCorp, 42
- Intelligent Decision Support for Assembly System Design, 135
- intelligent decision support, 135-136, 150-152, 288
- interest rates, 251
- IO-GEN, 275-276, 286
- ITR, 257-258
- Iwata, Yoshiteru, 177
  
- Jambor, Roger, 255-256, 258, 260, 262, 264, 266, 268
- Jow, Sylvia, 255
  
- KEE, 42, 123
- Kent County Council, 42
- Kirchmayr, Klaus, 271
- Klahr, Philip, 255
- knowledge generation, 26-27, 29-30, 33, 37, 56, 58-64, 72-78, 82-83, 136, 144, 151-152, 154-155, 196-198, 200-211, 216-220, 224-227, 229-230, 235, 239, 242, 271-274, 277, 280, 284-288, 291-293, 295, 297-298, 300, 302, 307, 309-313, 315-319, 337, 341-342, 349, 351-354
- Knowledge-Based System to Support Nuclear Test Ban Treaty Verification, 337
- knowledge management, 280, 284-285
- knowledge-modeling approach, 259
- knowledge representation, 73, 123-124, 151, 208, 274, 330
  
- Lauer, Robert, 55
- letters, 67-68, 70-71, 75, 77-81, 239
- Leung, H. W., 135
  
- Levine, Richard, 233
- Lewis, Lundy, 121
- lex, 222
- Lichtenstein, Yossi, 87
- Lisp, 8, 28-29, 31, 42-44, 50, 115, 137-138, 158-160, 162, 168, 170, 206, 212, 218-219, 221, 226, 260, 345, 347, 351
- LMOS, 215-224
- loan income pressure score, 245
- Lubrizol Corporation, 55
- Luby, S. C., 135
- Luczynski, Kris, 157
  
- machine learning, 107, 112, 115, 117-118, 132
- Macintosh computer, 28-29, 33, 43-44
- MacKinnon, Gary, 233, 242
- maintenance administrator, 215, 217-218, 220, 222-224, 227, 229-230
- marketing, 6-7, 11-12, 18-19, 255
- matched defect, 110
- material safety data sheet, 55
- mechanical drawing, 136, 140, 144-146, 151, 154-155, 157-159, 162, 165-167, 170, 173, 175
- mechanical engineering, 121-124, 131-132, 135-136, 140, 144-146, 150-151, 154-155, 157-160, 162, 164-165, 167, 172, 174
- Meder, Dan, 255
- medical imagery, 107
- Meeting a Competitive Challenge in the Frequent Flyer Competition, 11
- metarule, 109, 112-116
- Metzinger, R. W., 135
- MicroExplorer, 28-29, 287
- Microsoft Windows, 44, 108
- Microsoft Word, 70-72, 75-81
- MLT, 216-217, 220
- MOCA—A Knowledge-Based System for Airline Maintenance, 21
- MOCA, 21-37
- modeling, 14, 75, 132, 136, 138-140, 150-151, 153, 155, 217, 274, 286
- MSDS, 55-64
- muLisp, 170
- multiple expert system:
  - myocardium, 110-111
  
- network processing, 11-13, 15-19, 21, 31, 207-208, 216, 225, 228, 233, 237, 239,

- 242, 293, 295, 297, 299-303, 310, 312, 319, 321, 324, 327, 330-331, 334-335, 337-342, 344-355
- neural network:
- Neuron Data, Inc.:
- Nevins, J. L., 135
- Nexpert Object, 108
- Nippon Steel Corporation, 177
- NMRD, 338, 340-342, 344-345, 351-354
- nonconformances, 121-123, 125, 127-129, 131, 133
- Northwest Airlines, 3-4, 6-9
- null adaptation, 126, 129
- Nynex Max: A Telephone Trouble Screening Expert, 213
- NYNEX MAX, 213, 215, 217, 219, 221, 223, 225, 227, 229
- NYNEX, 213, 215-217, 219, 221, 223, 225-227, 229-230
- Obama, Norio, 177
- object comparisons, 124-125
- object-oriented programming, 158-160, 162, 166-168, 170, 172, 176, 274-276, 279-280
- object-based frames, 72
- object-oriented database, 138
- open jaw, 13, 16-17
- operations research, 21-23, 25-27, 30-31, 33-36, 40-42, 47, 49-50, 55, 57-58, 62, 74, 78-79, 82, 122-124, 130-133, 135-137, 146, 153-155, 160, 174, 257-258, 260, 262, 295, 306, 309, 312, 318
- Pansophic Systems, 59
- parallel processing, 233, 236-237, 239, 242, 248, 252
- parameterized adaptation, 126, 129
- passenger revenue accounting, 3-5, 7-9
- payoff, 9, 18, 172, 210, 242, 285, 314-315
- PC, 43, 239
- PDP Research Group:
- PEARL, 138, 140
- Penman system, 71
- perfusion defect, 110
- pervasive reperfusion, 110-111
- Peters, T. J., 135
- planning goals, 27, 31-32
- PRA, 3, 9
- Pracht, Dave, 21
- Preist, Chris, 87, 95, 103
- PRISM, 88-93, 96-98, 100-102
- process plan, 135, 137, 147-149
- product design, 135, 137, 153-155
- Prolog, 19, 98, 100-101, 286
- pulp paper mills, 157, 159, 165, 168
- Putting Knowledge-Based Concepts to Work for Mechanical Design, 157
- Qdes: Quality-Design Expert System for Steel Products, 177
- QDES, 177-179, 181, 183, 185-189
- Rabinowitz, Henry, 213-214, 216, 218, 220, 222, 224, 226, 228, 230
- radiopaque dye, 106
- rapid prototyping, 13, 15, 114-115, 159
- Register, Michael, 195
- reperfusion defect, 110, 113, 116
- repetition, 300, 302
- report assembler, 248
- reversing horseshoe, 110
- Rewari, Anil, 195
- RISC, 87
- risk capacity, 247
- risk explosion, 246
- risk progression model, 247
- risk propensity score, 246
- Roth, Lew, 233
- RP, 246
- RRN, 122-123
- SABRE Computer Services, 11, 19
- SABRE, 11, 19, 29, 35
- SAIC, 338-339, 345, 351, 354
- Sakai Works, 177-181, 184-187, 189-190
- SATCOM, 295-296, 298
- Saunders, Rin, 105
- scan testing, 87-88, 90, 95-96, 98, 101, 103, 197, 209
- Scheduler for Schools and Colleges, 39
- scheduling, 21, 36, 40-43, 51, 131
- Science Applications International Corporation, 108, 338, 354
- screening decision unit, 216, 222-223
- SDRC, Inc., 138
- Segerstroms, John:
- seismic monitoring, 337-340, 342, 346-348, 351-355
- semantic net, 350
- serial processing, 87, 95, 248, 252
- shipbuilding, 121-122, 125, 131
- SIGMA-1, 108

## 362 INDEX

- Silverman, Barry, 291
- similarity metrics, 123-127, 130
- slices, 90-91, 93, 99-101
- Smits, Scott, 21
- Socratic hinting, 300
- Sorani, Giorgio, 55
- SparcStation, 219
- Springer, Stephen, 67
- state government, 56-57, 60, 62-63, 321-331, 333-335
- state-space search operator, 31
- station processing, 3, 5, 8, 23-24, 26, 31, 87-88, 102, 337-342, 344-355
- steel, 177-179, 185-187, 190
- structural adaptation, 122-123, 126-131
- Sun workstation, 137, 148-149, 218-219, 221, 228-229, 239-240, 340, 345
- Sun Microsystems, 8-9, 137, 218-219, 221, 240, 340, 345
- SunAmerica, 233-235, 240, 242
- Sunlink, 221
- Sunview, 219
- Swanger, Henry, 337
- Swiss Bank Corporation, 273, 284, 286-287
- syllabus, 39-51
- Symbolics, 42, 258
- symptom-solution module, 201, 209, 211
- syntax rules, 248
  
- TDW, 105-109, 111-112, 114-117
- telephone, 76, 213, 216-217, 222-223, 225-226, 229-230
- TELON, 59
- terminal emulation, 27, 29, 33, 76, 218-219, 221, 226, 230
- Texas Instruments, 28, 212
- text generation, 73-74, 77-78, 83
- thallium diagnostic tests, 105-118
- thallium imagery, 105-118
- Thallium Diagnostic Workstation: Learning to Diagnose Heart Imagery from Examples, 105
- TIME, 275, 308-321
- TRADOC, 291, 309, 312, 314-315, 318
- training, 33, 67, 70, 79-80, 82, 102-103, 105, 107, 109, 115-116, 176, 209-211, 216, 228, 242, 256, 287, 291, 313-314, 318-319, 325
- travel expense claims, 321-334
- truth maintenance, 274, 276
  
- Tung, K. K., 135
- turbo basic, 249
- Turbo C++, 128, 249
- Turbo C, 128
- tutoring, 107, 286, 291, 293, 300-302, 305-306, 312, 317, 319
  
- U.S. Army, 291-292, 297, 318-319
- UNIX, 158, 212, 218, 221-222, 228, 309
- unresolved crash processor, 196, 203-206, 209-210
- USAFSAM, 105-108, 115-118
- user interface, 7-8, 27-32, 43, 72, 76-77, 91, 96, 100, 102, 108, 115, 208, 218-219, 258, 274-276, 280, 287, 309, 328, 342-343, 353
  
- validation heuristics, 209
- Valles, Andrew, 3
- VanLoy, Joseph, 3
- VAX, 206-207
- VERCODE, 216
- VLSI, 87-88, 93, 95, 97, 100, 103
- vms, 195, 202, 204, 207
  
- washout abnormality, 110
- weighted factor analysis, 245
- Wenger, Dieter, 271, 274-275, 287
- Whitney, D. E., 135, 151, 154
- Wolf, Michael, 245,
- Wolf, Thomas, 67
- Wolin, Erica, 213
  
- X Window System, 158
- Xerox, 115, 253, 329
  
- YACC, 222