

Index

Symbols

3D business process visualisations 75
 3D entertainment environments 69
 3D environments 69, 74, 121
 3D graphical models 113
 3D images 196, 216
 3D laser scanners 186, 187, 188, 189, 191, 208
 3D laser scanning 205, 210
 3D laser systems 186
 3D modelling 212, 215
 3D models 181, 186, 189, 207, 212, 216
 3D objects 147, 166, 182, 184
 3D online worlds 166
 3D representations 197
 3D representation systems 181
 3D scanners 182, 183, 187, 201, 202, 209
 3D scanning systems 184
 3D simulations 73
 3D virtual anatomy 149
 3D visualisation 69, 73, 74, 84
 3D worlds 83, 84

A

agents module 132, 135
 agoraphobia 142
 anchor nodes 25, 26, 31
 artificial reality 120, 122, 127, 228
 augmented reality (AR) 105, 106, 107, 108,
 109, 110, 111, 112, 113, 114, 115, 116,
 221, 223, 229, 231, 233, 234, 235, 236,
 238
 augmented reality (AR) model 110, 111
 augmented reality (AR) systems 105, 107, 108,
 110, 111, 113, 114

augmented reality (AR) technique 107, 108

B

batch neural gas clustering algorithm (BNG)
 52
 biomechanical analysis 185, 186, 193, 194
 biomechanics 181, 182, 186, 192, 193
 bounding volume (BV) 37, 39, 40, 41, 42, 43,
 44, 45, 46, 47, 48, 49, 50, 51, 52, 61, 66,
 67
 bounding volume hierarchy (BVH) 37, 38, 40,
 46, 47, 48, 49, 50, 52, 53, 54, 55
 bounding volume test tree (BVTT) 48, 49
 brain-scanning technology 125
 business enterprises 1, 3, 6, 9, 11, 12
 business intelligence 6
 business models 1, 8, 12
 business process lifecycle 84
 business process management (BPM) 68, 70,
 71, 72, 73, 74, 75, 80, 84, 85
 business process modelling 68, 69, 70, 71, 81,
 84
 business process modelling notation (BPMN)
 71, 72, 75, 85, 223
 business process models 68, 70, 71, 80, 84
 business software 105
 buyology 126, 127
 Buyology 126

C

capture systems 184, 186, 187, 188, 192, 198
 central processing unit (CPU) 37, 40, 53, 58,
 69
 claustrophobia 142
 cloud of points 88, 94, 95, 96, 97, 99

cognitive load 105, 111, 112
 cognitive load theory 112
 cognitive neuroscientific techniques 125
 collision detection 36, 37, 38, 39, 40, 41, 42,
 43, 44, 45, 46, 47, 48, 50, 53, 58, 59, 61,
 62, 63, 64, 65, 218, 226, 230, 231
 Columbia Broadcasting System (CBS) 119,
 126
 community members 166, 167, 168, 173, 175,
 176
 computer aided design (CAD) 90, 97, 101,
 102, 228, 233
 computer aided manufacturing (CAM) 88, 89,
 97, 98
 computer aided manufacturing (CAM) systems
 88, 89
 computer support cooperative learning (CSCW)
 168, 180
 customer retention agent 131
 cyberspace 120, 168, 184
 Cybertouch glove 61

D

DataGlove 109
 data mining 2, 5, 12, 218
 data warehouses 2, 4, 5
 deformable objects 14, 15, 16, 17, 22, 26, 31
 degree of freedom (DOF) 59, 60, 66, 237
 Descartes, René 120
 desktop publishing 73
 Digital Factory for Human-Oriented Production
 System (DiFac) 109, 115, 222
 digital signal processors (DSP) 120
 Digital Surface Model 201
 dynamic objects 14, 31, 184

E

e-business 134
 e-commerce 130
 embedded knowledge 6

F

Facebook 164, 167, 169, 171, 172, 173, 175,
 177, 178
 flight simulation 165

functional magnetic resonance imaging (fMRI)
 118, 119, 120, 122, 123, 124, 125

G

game environments 73
 games industry, the 73
 games studios 73
 games technology 69, 74
 geographical information systems (GIS) 216
 geometry-based methods 16, 22
 global economy 1
 globalization 4, 8, 9
 global positioning system (GPS) 203, 204,
 205, 206, 207, 208, 209, 216
 graphical model 88, 90
 graphical user interface (GUI) 112
 graphics processing unit (GPU) 37, 40, 41, 61,
 63, 69, 225
 grid computing 2, 4, 8, 12, 226

H

haptic-constraint modeling 26, 29
 haptic-constraint tools 15, 26, 29
 haptic information 14
 haptic interaction 14, 16, 18, 21, 24, 26, 30
 haptic interface point (HIP) 16, 18, 27, 28, 29
 haptic rendering 36, 37, 55, 56, 58
 haptics 14, 15, 16, 17, 21, 22, 23, 26, 31, 32,
 34, 35, 223
 haptic sensations 14
 head-mounted display (HMD) 106, 107, 121,
 165
 heads up display (HUD) 78
 healthcare 138, 139, 140, 141, 142, 143, 144,
 152, 153, 154, 155, 156, 223
 healthcare sector 81, 138, 139, 140, 142, 152,
 153, 154, 155
 hidden line algorithm 94, 99
 high definition pictures 184
 Holobench system 109
 holograms 197

I

immersive virtual reality (IVR) 118, 120, 121,
 129

Index

information technology (IT) 4, 5, 68
inner sphere trees (IST) 50, 51, 54, 66, 237
innovation 1, 2, 3, 4, 5, 7, 9, 11, 12, 224, 231
innovation models 1
innovative method 1
intelligent systems 2, 5, 13, 236
interface agents 131
International Council on Monuments and Sites (ICOMOS) 213
international seminars 201
invention 2, 13, 231

K

kinetic data structure (KDS) 47, 48
kinetic variables 185, 192

L

Laparoscopic Impulse Engine (LIE) 147
laser acquisition systems 181
laser scanners 201, 202, 203, 204, 206, 207, 208, 209, 210, 212, 213, 215, 216
laser scanner systems 201, 204, 215
laser systems 216
learning agents 132
Linden scripting language (LSL) 166
low-cost neuroimaging instruments 126
lurkers 167

M

machining process simulation 91, 95, 96, 98
magnetic resonance imaging (MRI) 120, 122, 124, 126, 127, 128, 154, 221, 222, 237
magnetoencephalography (MEG) 118, 119, 120, 128, 234
marketing 1
massively multiplayer online games (MMOG) 165, 166, 176, 177
mesial prefrontal cortex (MPFC) 125
message boards 167
metaballs 14, 15, 16, 17, 26, 27, 28, 29, 30, 31
Metaplace 165, 166
milling machine 88, 89, 90, 97, 98
milling simulation by needles (MSN) 95, 96, 97, 100

milling simulation by needles (MSN) model 95, 96, 97
minimally invasive surgery (MIS) 141, 142
minimum spanning trees (MST) 107
mixed-reality 130, 131
mobikade 177
motivated agents 132
motivated learning agents 129, 131, 132, 136

N

neuroimaging technologies 118, 119, 120, 121, 123, 126
neuromarketers 118, 119, 120, 124, 126
neuromarketing 118, 119, 120, 123, 124, 125, 126, 128, 221, 233, 234, 235
neurosciences 118, 119, 123, 125
Nintendo Wiimote 68
nucleus accumbens (NAcc) 125

O

online analytical processing tools (OLAP) 5
online communities 167, 169
OpenGL 89, 90, 93, 94, 95, 98, 99, 100
orthographic projection 99

P

panic disorder 142
photogrammetric methodologies 202
photogrammetric methods 201, 202, 213, 214, 216
photogrammetry 201, 213, 214, 216, 217, 221, 224, 227, 231, 236
physically-based simulation 36, 60, 61, 62
physical-synthetic boundaries 131, 134
physics-based methods 16, 23
posttraumatic stress disorder (PTSD) 142
product service agent 131
pulsed laser beam 187

Q

quantitative electroencephalography (QEEG) 118, 119, 120
Queensland University of Technology (QUT) 69, 80

R

real environment 106
 real objects 30
 real time kinematic (RTK) 206, 207
 real world 106, 110, 111, 116, 130, 131, 132,
 133, 134, 135, 165, 169, 178, 182, 184
 research and development (R&D) 1
 resource description framework (RDF) 5
 retail stores 130, 132, 133, 134, 135
 risk-benefit ratio 151
 rubber band paradigm 60

S

Second Life 73, 79, 80, 81, 82, 84, 85, 86, 129,
 130, 131, 132, 134, 135, 136, 165, 166,
 168, 169, 170, 171, 173, 174, 175, 178,
 179, 180, 220, 223, 229, 235
 sensory channels 14
 sensory feedback 14
 SimMan 142
 Small and medium enterprises (SME) 74
 social games 165
 social networking 175, 177
 social networks 164, 165, 169, 170, 171, 172,
 173, 174, 175, 176, 177, 178, 180
 social phobia 142
 soft objects 14, 16, 17, 25, 26
 soft-touch freeform objects 15
 soft-touch haptics modeling 14
 software operating environment 69
 stereophotogrammetry 203
 structured query language (SQL) 5
 Sun Microsystems 129
 surface roughness 88, 89, 90, 91, 92, 93, 94,
 95, 97, 98, 99, 100, 101, 102, 218, 219,
 220, 237
 synthetic spaces 131, 134
 synthetic-synthetic boundaries 131, 134

T

tacit knowledge 6
 terrestrial laser scanners 204
 text mining 2
 Time Machine 68
 topography 201, 202, 216

topomorphy 88, 89, 91, 92, 93, 94, 95, 97, 98,
 99, 100, 101, 219, 220
 triangular grid (TIN) 205, 211

V

virtual communities 164, 165, 166, 167, 168,
 169, 170, 171, 173, 174, 175, 176, 177,
 178, 179, 229
 virtual currency 174
 virtual environments 14, 30, 31, 68, 69, 70, 71,
 72, 73, 74, 75, 76, 77, 79, 80, 83, 84, 86,
 88, 89, 90, 91, 92, 94, 95, 97, 98, 100,
 101, 106, 120, 121, 126, 128, 129, 130,
 131, 134, 135, 136, 137, 238, 220, 222,
 235, 236,
 virtual environments, 3D 68, 69, 70, 72, 74,
 79, 131
 virtual environment simulations 70
 virtual environments, shared 129, 130
 virtual environment work station project 2
 virtual hand 60
 virtual haptic interaction point (VHIP) 18
 virtual images 197
 virtual manufacturing system 89
 virtual models 182, 183, 184, 190, 192
 virtual objects 15, 16, 17, 30, 36, 106, 109,
 113, 114, 130
 virtual organization 1, 4
 virtual payments 175
 virtual phototype 111
 virtual products 129, 134
 virtual prototyping 36, 37, 59
 virtual reality 165
 virtual reality modelling language (VRML) 89
 virtual reality (VR) 1, 2, 3, 4, 8, 12, 14, 21,
 31, 35, 36, 37, 43, 59, 60, 62, 74, 88, 89,
 102, 103, 106, 108, 114, 115, 116, 118,
 119, 120, 121, 122, 123, 125, 126, 127,
 128, 129, 136, 138, 139, 140, 141, 142,
 143, 149, 150, 151, 152, 153, 154, 155,
 156, 158, 159, 164, 165, 166, 176, 177,
 178, 181, 182, 183, 184, 185, 186, 187,
 195, 218, 219, 220, 222, 223, 228, 230,
 231, 233, 234, 235, 236, 237, 238
 virtual reality (VR) applications 14, 36, 43,
 138, 139, 142, 143, 154, 164, 165, 177

Index

virtual reality (VR) developers 165
virtual reality (VR) interfaces 183
virtual reality (VR) models 183
virtual reality (VR) platform 89
virtual reality (VR) simulation 21, 149
virtual reality (VR) simulators 139, 141, 150
virtual reality (VR) surgery simulator 138
virtual reality (VR) system 37, 60, 139, 140,
142, 149, 152, 153, 154, 155
virtual reality (VR) techniques 36, 138, 139,
141, 142, 153
virtual reality (VR) technology 164, 165, 177,
178
virtual scene 21, 25, 143, 144, 147
virtual shopping system 130
virtual spaces 69, 131, 166, 173
virtual spaces, 3D 69

virtual stores 133, 134
virtual team 7
virtual worlds 14, 26, 30, 69, 70, 71, 75, 76,
77, 78, 80, 81, 83, 106, 109, 120, 129,
130, 131, 133, 134, 135, 182, 184
virtual worlds, 3D 70, 75
Voxmap Pointshell algorithm (VPS) 50

W

Web portals 165, 175, 177
word processing 73
workflow systems 68

Y

Yet Another Workflow Language (YAWL) 68,
71, 72, 79, 80, 81, 82, 85, 86