

Contents

Page

Foreword	ix
Introduction	x
1 Scope	1
2 Normative references	2
2.1 International standards	2
2.2 Publicly-available specifications	2
3 Terms, definitions, notations and conventions	3
3.1 Terms and definitions	3
3.2 Notations	10
3.3 Conventions	11
4 Concepts	12
4.1 Data mining techniques	12
4.2 Computational phases	12
4.2.1 Training phase	12
4.2.2 Model introspection phase	13
4.2.3 Application phase	15
4.2.4 Testing phase	16
4.3 Mapping on user-defined types	17
4.3.1 Target application	17
4.3.2 The relationships of the user-defined types	17
4.3.3 User-defined types that are not related to mining techniques	19
4.3.4 User-defined types that are related to mining techniques	19
5 Data Mining Data Types	22
5.1 DM_LogicalDataSpec Type and Routines	22
5.1.1 DM_LogicalDataSpec Type	22
5.1.2 DM_addDataSpecFld Method	24
5.1.3 DM_remDataSpecFld Method	25
5.1.4 DM_getNumFields Method	26
5.1.5 DM_getFldName Method	27
5.1.6 DM_setFldType Method	28
5.1.7 DM_getFldType Method	30
5.1.8 DM_isCompatible Method	31
5.2 DM_MiningData Type and Routines	32
5.2.1 DM_MiningData Type	32
5.2.2 DM_defMiningData Method	34
5.2.3 DM_setFldAlias Method	35
5.2.4 DM_genDataSpec Method	36
5.3 DM_ApplicationData Type and Routines	37
5.3.1 DM_ApplicationData Type	37
5.3.2 DM_genDataSpec Method	38
5.3.3 DM_impApplData Method	39
6 Association Rules	40
6.1 DM_RuleSettings Type and Routines	40
6.1.1 DM_RuleSettings Type	40
6.1.2 DM_impRuleSettings Method	43

6.1.3	DM_expRuleSettings Method	44
6.1.4	DM_setRuleFilter Method	45
6.1.5	DM_getRuleFilter Method	46
6.1.6	DM_setMinSupport Method	47
6.1.7	DM_getMinSupport Method	48
6.1.8	DM_setMinConf Method	49
6.1.9	DM_getMinConf Method	50
6.1.10	DM_setMaxLength Method	51
6.1.11	DM_getMaxLength Method	52
6.1.12	DM_useRuleDataSpec Method	53
6.1.13	DM_getRuleDataSpec Method	54
6.1.14	DM_setGroup Method	55
6.1.15	DM_getGroup Method	56
6.1.16	DM_setSequence Method	57
6.1.17	DM_getSequence Method	58
6.2	DM_RuleBldTask type and Routines	59
6.2.1	DM_RuleBldTask Type	59
6.2.2	DM_defRuleBldTask Method	60
6.2.3	DM_getRuleTrnData Method	61
6.2.4	DM_getRuleSettings Method	62
6.2.5	DM_buildRuleModel Method	63
6.3	DM_RuleModel Type and Routines	64
6.3.1	DM_RuleModel Type	64
6.3.2	DM_impRuleModel Method	67
6.3.3	DM_getRuleMdlType Method	68
6.3.4	DM_expRuleModel Method	69
6.3.5	DM_applyRuleModel Method	70
6.3.6	DM_getNumItemSets Method	71
6.3.7	DM_getNumSequences Method	72
6.3.8	DM_getNumRules Method	73
6.3.9	DM_filterRules Method	74
6.3.10	DM_getNumTransacts Method	75
6.3.11	DM_getItemSets Method	76
6.3.12	DM_getRules Method	77
6.3.13	DM_getRuleBodies Method	78
6.3.14	DM_getSequences Method	79
6.3.15	DM_getSeqDetails Method	80
6.3.16	DM_getSeqRules Method	81
6.3.17	DM_getRuleBldTask method	83
6.4	DM_RuleFilter Type and Routines	84
6.4.1	DM_RuleFilter Type	84
6.4.2	DM_addRangeConstr Method	86
6.4.3	DM_remRangeConstr Method	88
6.4.4	DM_getRangeConstrs Method	89
6.4.5	DM_setMaxNumRules Method	90
6.4.6	DM_getMaxNumRules Method	91
6.4.7	DM_addCountConstr Method	92
6.4.8	DM_remCountConstr Method	93
6.4.9	DM_getCountConstrs Method	94
6.4.10	DM_setItemConstr Method	95
6.4.11	DM_getItemConstrs Method	97
6.5	DM_RuleAppITask Type and Routines	98
6.5.1	DM_RuleAppITask Type	98
6.5.2	DM_defRuleAppITask Method	100
6.5.3	DM_getRuleMdl Method	102
6.5.4	DM_getRuleAppIData Method	103
6.5.5	DM_getRuleOutpData Method	104
6.5.6	DM_getRuleGroupFId method	105
6.5.7	DM_applyRuleMdl method	106
7	Clustering	107
7.1	DM_ClusSettings Type and Routines	107

7.1.1	DM_ClusSettings Type	107
7.1.2	DM_impClusSettings Method	109
7.1.3	DM_expClusSettings Method	110
7.1.4	DM_setMaxNumClus Method	111
7.1.5	DM_getMaxNumClus Method	112
7.1.6	DM_setFldWeight Method	113
7.1.7	DM_getFldWeight Method	114
7.1.8	DM_setFldSimScale Method	115
7.1.9	DM_getFldSimScale Method	116
7.1.10	DM_useClusDataSpec Method	117
7.1.11	DM_getClusDataSpec Method	118
7.2	DM_ClusBldTask type and Routines	119
7.2.1	DM_ClusBldTask Type	119
7.2.2	DM_defClusBldTask Method	120
7.2.3	DM_getClusTrnData Method	121
7.2.4	DM_getClusSettings Method	122
7.2.5	DM_buildClusModel Method	123
7.3	DM_ClusteringModel Type and Routines	124
7.3.1	DM_ClusteringModel Type	124
7.3.2	DM_impClusModel Method	126
7.3.3	DM_expClusModel Method	127
7.3.4	DM_getNumClusters Method	128
7.3.5	DM_getClusters Method	129
7.3.6	DM_getMdlQuality Method	130
7.3.7	DM_applyClusModel Method	131
7.3.8	DM_getClusTask method	132
7.3.9	DM_getClusMdlSpec method	133
7.3.10	DM_getFields	134
7.4	DM_ClusApplTask Type and Routines	135
7.4.1	DM_ClusApplTask Type	135
7.4.2	DM_defClusApplTask Method	137
7.4.3	DM_getClusMdl Method	138
7.4.4	DM_getClusApplData Method	139
7.4.5	DM_getClusOutpData Method	140
7.4.6	DM_getClusResFld method	141
7.4.7	DM_applyClusMdl method	142
7.5	DM_ClusResult Type and Routines	143
7.5.1	DM_ClusResult Type	143
7.5.2	DM_getClusterID Method	144
7.5.3	DM_getQuality Method	145
8	Classification	146
8.1	DM_ClasSettings Type and Routines	146
8.1.1	DM_ClasSettings Type	146
8.1.2	DM_impClasSettings Method	149
8.1.3	DM_expClasSettings Method	150
8.1.4	DM_setClasCostRate Method	151
8.1.5	DM_getClasCostRate Method	152
8.1.6	DM_setClasCost Method	153
8.1.7	DM_getClasCost Method	154
8.1.8	DM_useClasDataSpec Method	155
8.1.9	DM_getClasDataSpec Method	156
8.1.10	DM_setClasTarget Method	157
8.1.11	DM_getClasTarget Method	158
8.2	DM_ClasBldTask Type and Routines	159
8.2.1	DM_ClasBldTask Type	159
8.2.2	DM_defClasBldTask Method	161
8.2.3	DM_getClasTrnData Method	162
8.2.4	DM_getClasValData Method	163
8.2.5	DM_getClasSettings Method	164
8.2.6	DM_buildClasModel Method	165
8.3	DM_ClasModel Type and Routines	166

8.3.1	DM_ClasModel Type	166
8.3.2	DM_impClasModel Method	169
8.3.3	DM_expClasModel Method	170
8.3.4	DM_applyClasModel Method	171
8.3.5	DM_testClasModel Method	172
8.3.6	DM_getClasCostRate Method	173
8.3.7	DM_isValidated Method	174
8.3.8	DM_getRankQuality method	175
8.3.9	DM_getPredAccuracy Method	176
8.3.10	DM_getReliability Method	177
8.3.11	DM_getMdlQuality Method	178
8.3.12	DM_getGainsChart method	179
8.3.13	DM_getClasTask method	180
8.3.14	DM_getClasMdlSpec method	181
8.3.15	DM_getFields	182
8.3.16	DM_getClasTarget method	183
8.4	DM_ClasTestTask Type and Routines	184
8.4.1	DM_ClasTestTask Type	184
8.4.2	DM_defClasTestTask Method	185
8.4.3	DM_getClasTestData Method	186
8.4.4	DM_getClasTestMdl Method	187
8.4.5	DM_testClasMdl Method	188
8.5	DM_ClasTestResult Type and Routines	189
8.5.1	DM_ClasTestResult Type	189
8.5.2	DM_getClasError Method	191
8.5.3	DM_getRankQuality Method	192
8.5.4	DM_getPredAccuracy Method	193
8.5.5	DM_getReliability Method	194
8.5.6	DM_getMdlQuality Method	195
8.5.7	DM_getGainsChart Method	196
8.5.8	DM_getNumClasses Method	197
8.5.9	DM_getClass Method	198
8.5.10	DM_getClasPreds Method	199
8.6	DM_ClasApplTask Type and Routines	200
8.6.1	DM_ClasApplTask Type	200
8.6.2	DM_defClasApplTask Method	202
8.6.3	DM_getClasMdl Method	203
8.6.4	DM_getClasApplData Method	204
8.6.5	DM_getClasOutpData Method	205
8.6.6	DM_getClasResFld method	206
8.6.7	DM_applyClasMdl method	207
8.7	DM_ClasResult Type and Routines	208
8.7.1	DM_ClasResult Type	208
8.7.2	DM_getPredClass Method	209
8.7.3	DM_getConfidence Method	210
9	Regression	211
9.1	DM_RegSettings Type and Routines	211
9.1.1	DM_RegSettings Type	211
9.1.2	DM_impRegSettings Method	213
9.1.3	DM_expRegSettings Method	214
9.1.4	DM_setRegRSquared Method	215
9.1.5	DM_getRegRSquared Method	216
9.1.6	DM_useRegDataSpec Method	217
9.1.7	DM_getRegDataSpec Method	218
9.1.8	DM_setRegTarget Method	219
9.1.9	DM_getRegTarget Method	220
9.2	DM_RegBldTask type and Routines	221
9.2.1	DM_RegBldTask Type	221
9.2.2	DM_defRegBldTask Method	223
9.2.3	DM_getRegTrnData Method	224
9.2.4	DM_getRegValData Method	225

9.2.5	DM_getRegSettings Method	226
9.2.6	DM_buildRegModel Method	227
9.3	DM_RegressionModel Type and Routines	228
9.3.1	DM_RegressionModel Type	228
9.3.2	DM_impRegModel Method	231
9.3.3	DM_expRegModel Method	232
9.3.4	DM_applyRegModel Method	233
9.3.5	DM_testRegModel Method	234
9.3.6	DM_getRegRSquared method	235
9.3.7	DM_isValidated Method	236
9.3.8	DM_getRankQuality Method	237
9.3.9	DM_getPredAccuracy Method	238
9.3.10	DM_getReliability Method	239
9.3.11	DM_getMdlQuality Method	240
9.3.12	DM_getRMSE Method	241
9.3.13	DM_getGainsChart method	242
9.3.14	DM_getRegTask method	243
9.3.15	DM_getRegMdlSpec method	244
9.3.16	DM_getFields method	245
9.3.17	DM_getRegTarget method	246
9.4	DM_RegTestTask Type and Routines	247
9.4.1	DM_RegTestTask Type	247
9.4.2	DM_defRegTestTask Method	248
9.4.3	DM_getRegTestData Method	249
9.4.4	DM_getRegTestMdl Method	250
9.4.5	DM_testRegMdl Method	251
9.5	DM_RegTestResult Type and Routines	252
9.5.1	DM_RegTestResult Type	252
9.5.2	DM_getPredError Method	254
9.5.3	DM_getRankQuality Method	255
9.5.4	DM_getPredAccuracy Method	256
9.5.5	DM_getReliability Method	257
9.5.6	DM_getMdlQuality	258
9.5.7	DM_getRMSE Method	259
9.5.8	DM_getGainsChart Method	260
9.6	DM_RegAppITask Type and Routines	261
9.6.1	DM_RegAppITask Type	261
9.6.2	DM_defRegAppITask Method	263
9.6.3	DM_getRegMdl Method	264
9.6.4	DM_getRegAppIData Method	265
9.6.5	DM_getRegOutpData Method	266
9.6.6	DM_getRegResFld method	267
9.6.7	DM_applyRegMdl method	268
9.7	DM_RegResult Type and Routines	269
9.7.1	DM_RegResult Type	269
9.7.2	DM_getPredValue Method	270
10	Status Codes	271
11	Conformance	273
11.1	Requirements for conformance	273
11.1.1	Support for user-defined types and functions	273
11.1.2	Support for data mining phases	273
11.1.3	Support for basic user-defined types	273
11.1.4	Support for data mining techniques	273
11.2	Claims of conformance	274
	Annex A (informative) Implementation-defined Elements	276
	Annex B (informative) Implementation-dependent elements	278
	Annex C (informative) A Scenario Using the Classification Technique	279

Index	281
Figures Page Figure 1 -- The training phase	13
Figure 2 -- Gains chart	15
Figure 3 -- The application phase	15
Figure 4 -- The testing phase	17
Figure 5 -- Overview of user-defined types for the training phase	17
Figure 6 -- Overview of user-defined types for training, testing and application	18
Figure 7 -- Overview of user-defined types for bulk application	19
Tables Page Table 1 -- Model interpretation	13
Table 2 -- Gains chart information	14
Table 3 -- Items inferred from an association rule model	16
Table 4 -- Groups of items inferred from an association rule model	16
Table 5 -- Values for field types	28
Table 6 -- Values for operators	86
Table 7 -- Values for restriction criteria	87
Table 8 -- Values for constraint types	95
Table 9 -- SQLSTATE class and subclass values	272