

ภาคผนวก ข

รูปแบบโมเดลการตัดสินใจของเทคนิค ID3

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1  === Run information ===
2
3  Scheme:      weka.classifiers.trees.Id3
4  Relation:    Data_IS_unmissing_V5_new2-weka.filters.unsupervised.attribute.Remove-R1
5  Instances:   12893
6  Attributes:  5
7              Utilization
8              Movement
9              LTV
10             PaymentHistory
11             Class
12 Test mode:   10-fold cross-validation
13
14 === Classifier model (full training set) ===
15
16 Id3
17
18
19 Utilization = >95-100
20 | LTV = <=75
21 | | Movement = <10: Pass
22 | | Movement = 15-19.99: Pass
23 | | Movement = 10-14.99: Pass
24 | | Movement = >=20: Pass
25 | LTV = >80-100
26 | | Movement = <10
27 | | | PaymentHistory = Good: No
28 | | | PaymentHistory = Bad: No
29 | | Movement = 15-19.99: No
30 | | Movement = 10-14.99: No
31 | | Movement = >=20: Pass
32 | LTV = >75-80
33 | | Movement = <10
34 | | | PaymentHistory = Good: No
35 | | | PaymentHistory = Bad: No
36 | | Movement = 15-19.99: Pass
37 | | Movement = 10-14.99
38 | | | PaymentHistory = Good: Pass
39 | | | PaymentHistory = Bad: No
40 | | Movement = >=20
41 | | | PaymentHistory = Good: Pass
42 | | | PaymentHistory = Bad: No
43 | LTV = CleanLoan
44 | | Movement = <10
45 | | | PaymentHistory = Good: Pass
46 | | | PaymentHistory = Bad: Pass
47 | | Movement = 15-19.99: Pass
48 | | Movement = 10-14.99: Pass
49 | | Movement = >=20: Pass
50 | LTV = >100
51 | | Movement = <10
52 | | | PaymentHistory = Good: No
53 | | | PaymentHistory = Bad: No
54 | | Movement = 15-19.99: No
55 | | Movement = 10-14.99
56 | | | PaymentHistory = Good: No
57 | | | PaymentHistory = Bad: No
58 | | Movement = >=20
59 | | | PaymentHistory = Good: Pass
60 | | | PaymentHistory = Bad: No
61 | LTV = Deposit
62 | | Movement = <10
63 | | | PaymentHistory = Good: Pass
64 | | | PaymentHistory = Bad: Pass
65 | | Movement = 15-19.99: Pass

```

ภาพที่ ข.1 รูปแบบโมเดลการตัดสินใจของเทคนิค J48

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66 | | Movement = 10-14.99: Pass
67 | | Movement = >=20: Pass
68 Utilization = <=80
69 | LTV = <=75
70 | | Movement = <10: Pass
71 | | Movement = 15-19.99: Pass
72 | | Movement = 10-14.99: Pass
73 | | Movement = >=20: Pass
74 | LTV = >80-100
75 | | Movement = <10: Pass
76 | | Movement = 15-19.99: Pass
77 | | Movement = 10-14.99: Pass
78 | | Movement = >=20: Pass
79 | LTV = >75-80
80 | | Movement = <10: Pass
81 | | Movement = 15-19.99: Pass
82 | | Movement = 10-14.99: Pass
83 | | Movement = >=20: Pass
84 | LTV = CleanLoan: Pass
85 | LTV = >100
86 | | Movement = <10: Pass
87 | | Movement = 15-19.99: Pass
88 | | Movement = 10-14.99: Pass
89 | | Movement = >=20: Pass
90 | LTV = Deposit: Pass
91 Utilization = >100
92 | LTV = <=75
93 | | Movement = <10
94 | | | PaymentHistory = Good: No
95 | | | PaymentHistory = Bad: No
96 | | Movement = 15-19.99
97 | | | PaymentHistory = Good: Pass
98 | | | PaymentHistory = Bad: No
99 | | Movement = 10-14.99
100 | | | PaymentHistory = Good: Pass
101 | | | PaymentHistory = Bad: No
102 | | Movement = >=20
103 | | | PaymentHistory = Good: Pass
104 | | | PaymentHistory = Bad: No
105 | LTV = >80-100
106 | | PaymentHistory = Good: No
107 | | PaymentHistory = Bad: No
108 | LTV = >75-80
109 | | PaymentHistory = Good: No
110 | | PaymentHistory = Bad: No
111 | LTV = CleanLoan
112 | | PaymentHistory = Good
113 | | | Movement = <10: Pass
114 | | | Movement = 15-19.99: null
115 | | | Movement = 10-14.99: Pass
116 | | | Movement = >=20: Pass
117 | | PaymentHistory = Bad: Pass
118 | LTV = >100
119 | | Movement = <10
120 | | | PaymentHistory = Good: No
121 | | | PaymentHistory = Bad: No
122 | | Movement = 15-19.99: null
123 | | Movement = 10-14.99: null
124 | | Movement = >=20: Pass
125 | LTV = Deposit
126 | | PaymentHistory = Good: Pass
127 | | PaymentHistory = Bad: Pass
128 Utilization = >80-90
129 | LTV = <=75
130 | | Movement = <10: Pass

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131 | | Movement = 15-19.99: Pass
132 | | Movement = 10-14.99: Pass
133 | | Movement = >=20: Pass
134 | LTV = >80-100
135 | | Movement = <10
136 | | | PaymentHistory = Good: No
137 | | | PaymentHistory = Bad: No
138 | | Movement = 15-19.99: Pass
139 | | Movement = 10-14.99: No
140 | | Movement = >=20: Pass
141 | LTV = >75-80
142 | | Movement = <10: Pass
143 | | Movement = 15-19.99: Pass
144 | | Movement = 10-14.99: Pass
145 | | Movement = >=20: Pass
146 | LTV = CleanLoan
147 | | Movement = <10: Pass
148 | | Movement = 15-19.99: Pass
149 | | Movement = 10-14.99: Pass
150 | | Movement = >=20: Pass
151 | LTV = >100
152 | | Movement = <10: No
153 | | Movement = 15-19.99: Pass
154 | | Movement = 10-14.99: Pass
155 | | Movement = >=20: Pass
156 | LTV = Deposit
157 | | Movement = <10: Pass
158 | | Movement = 15-19.99: Pass
159 | | Movement = 10-14.99: Pass
160 | | Movement = >=20: Pass
161 | Utilization = >90-95
162 | LTV = <=75
163 | | Movement = <10: Pass
164 | | Movement = 15-19.99: Pass
165 | | Movement = 10-14.99: Pass
166 | | Movement = >=20: Pass
167 | LTV = >80-100
168 | | Movement = <10: No
169 | | Movement = 15-19.99: Pass
170 | | Movement = 10-14.99: No
171 | | Movement = >=20: Pass
172 | LTV = >75-80
173 | | Movement = <10
174 | | | PaymentHistory = Good: No
175 | | | PaymentHistory = Bad: No
176 | | Movement = 15-19.99: Pass
177 | | Movement = 10-14.99: Pass
178 | | Movement = >=20: Pass
179 | LTV = CleanLoan
180 | | Movement = <10: Pass
181 | | Movement = 15-19.99: Pass
182 | | Movement = 10-14.99: Pass
183 | | Movement = >=20: Pass
184 | LTV = >100
185 | | Movement = <10
186 | | | PaymentHistory = Good: No
187 | | | PaymentHistory = Bad: Pass
188 | | Movement = 15-19.99: null
189 | | Movement = 10-14.99: No
190 | | Movement = >=20
191 | | | PaymentHistory = Good: Pass
192 | | | PaymentHistory = Bad: Pass
193 | LTV = Deposit
194 | | Movement = <10
195 | | | PaymentHistory = Good: Pass
196 | | | PaymentHistory = Bad: Pass
197 | | Movement = 15-19.99: Pass
198 | | Movement = 10-14.99: Pass
199 | | Movement = >=20: Pass
200
201 | Time taken to build model: 0.03 seconds
202
203 | === Stratified cross-validation ===
204 | === Summary ===
205
206 | Correctly Classified Instances      12489      96.8665 %
207 | Incorrectly Classified Instances    400         3.1025 %
208 | Kappa statistic                     0.7661
209 | Mean absolute error                 0.0531
210 | Root mean squared error            0.1659
211 | Relative absolute error             36.2797 %
212 | Root relative squared error        61.3118 %
213 | UnClassified Instances              4           0.031 %
214 | Total Number of Instances          12893
215
216 | === Detailed Accuracy By Class ===
217
218 |           TP Rate  FP Rate  Precision  Recall  F-Measure  ROC Area  Class
219 |           0.992  0.298  0.975  0.992  0.983  0.938  Pass
220 |           0.702  0.008  0.883  0.702  0.783  0.939  No
221 | Weighted Avg.  0.969  0.275  0.967  0.969  0.967  0.938
222
223 | === Confusion Matrix ===
224
225 |   a  b  <-- classified as
226 | 11769  95 | a = Pass
227 | 305  720 | b = No

```

ภาพที่ ข.1 (ต่อ)