## 計算数学特論 レポート課題3 機械知能工学専攻 16344217 津上 祐典

(1) 
$$\tau_1: [P,1] => [S,1]$$

$$minsup(\tau_1) = 0$$
,  $maxsup(\tau_1) = 0$ 

(2) 
$$\tau_2 : [P,1] => [S,2]$$

$$minsup(\tau_2) = 0$$
,  $maxsup(\tau_2) = \frac{1}{5}$ ,  $INACC = \{3\}$ ,  $maxacc(\tau_2) = \frac{1}{2}$ 

(3) 
$$\tau_3: [P,1] => [S,3]$$

$$\begin{aligned} minsup(\tau_3) &= \frac{1}{5} \;,\; INACC = \{3\} \;,\; minacc(\tau_3) &= \frac{1}{2} \\ maxsup(\tau_3) &= \frac{1}{5} \;,\; INACC = \{\} \;,\; maxacc(\tau_3) &= 1 \end{aligned}$$

**(4)** 
$$\tau_4: [P,2] => [S,1]$$

$$minsup(\tau_4) = 0$$
,  $maxsup(\tau_4) = \frac{2}{5}$ ,  $INACC = \{3\}$ ,  $maxacc(\tau_4) = 1$ 

(5) 
$$\tau_5: [P,2] => [S,2]$$

$$minsup(\tau_5) = 0$$
,  $maxsup(\tau_5) = \frac{1}{5}$ ,  $INACC = \{3\}$ ,  $maxacc(\tau_5) = \frac{1}{2}$ 

(6) 
$$\tau_6: [P,2] => [S,3]$$

$$minsup(\tau_6) = 0$$
,  $maxsup(\tau_6) = \frac{1}{5}$ ,  $INACC = \{\}$ ,  $maxacc(\tau_6) = 1$ 

(7) 
$$\tau_7: [P,3] => [S,1]$$

$$minsup(\tau_7) = 0$$
,  $maxsup(\tau_7) = \frac{1}{5}$ ,  $INACC = \{\}$ ,  $maxacc(\tau_7) = \frac{1}{2}$ 

(8) 
$$\tau_8: [P,3] => [S,2]$$

$$minsup(\tau_8) = 0$$
,  $maxsup(\tau_8) = \frac{1}{5}$ ,  $INACC = \{\}$ ,  $maxacc(\tau_8) = \frac{1}{2}$ 

(9) 
$$\tau_9: [P,3] => [S,3]$$

$$\begin{aligned} \mathit{minsup}(\tau_9) &= \frac{1}{5} \;,\; \mathit{OUTACC} = \{\} \;,\; \mathit{minacc}(\tau_9) = \frac{1}{2} \\ \mathit{maxsup}(\tau_9) &= \frac{1}{5} \;,\; \mathit{INACC} = \{\} \;,\; \mathit{maxacc}(\tau_9) = \frac{1}{2} \end{aligned}$$

(10) 
$$\tau_{10}: [Q,1] => [S,1]$$

$$minsup(\tau_{10}) = 0$$
,  $maxsup(\tau_{10}) = \frac{1}{5}$ ,  $INACC = \{\}$ ,  $maxacc(\tau_{10}) = 1$ 

(11) 
$$\tau_{11}: [Q, 1] => [S, 2]$$
 
$$minsup(\tau_{11}) = 0 , maxsup(\tau_{11}) = \frac{1}{5} , INACC = \{\} , maxacc(\tau_{11}) = 1 \}$$

(12) 
$$\tau_{12}: [Q, 1] => [S, 3]$$
 
$$minsup(\tau_{12}) = 0 , maxsup(\tau_{12}) = \frac{1}{5} , INACC = \{1\} , maxacc(\tau_{12}) = \frac{1}{2}$$

(13) 
$$\tau_{13}: [Q, 2] => [S, 1]$$
 
$$minsup(\tau_{13}) = 0 , maxsup(\tau_{13}) = \frac{2}{5} , INACC = \{2\} , maxacc(\tau_{13}) = 1$$

(14) 
$$\tau_{14}: [Q, 2] => [S, 2]$$
 
$$minsup(\tau_{14}) = 0 , maxsup(\tau_{14}) = \frac{1}{5} , INACC = \{\} , maxacc(\tau_{14}) = 1$$

(15) 
$$\tau_{15}: [Q, 2] => [S, 3]$$
 
$$minsup(\tau_{15}) = 0 , maxsup(\tau_{15}) = \frac{1}{5} , INACC = \{2\} , maxacc(\tau_{15}) = \frac{1}{2}$$

(16) 
$$\tau_{16}: [Q, 3] => [S, 1]$$
  
 $minsup(\tau_{16}) = 0 , maxsup(\tau_{16}) = \frac{1}{5} , INACC = \{2\} , maxacc(\tau_{16}) = \frac{1}{2}$ 

(17) 
$$\tau_{17}: [Q,3] => [S,2]$$

$$minsup(\tau_{17}) = 0$$
,  $maxsup(\tau_{17}) = 0$ 

(18) 
$$\tau_{18}: [Q, 3] => [S, 3]$$

$$minsup(\tau_{18}) = \frac{1}{5} , OUTACC = \{2\} , minacc(\tau_{18}) = \frac{1}{2}$$

$$maxsup(\tau_{18}) = \frac{3}{5} , INACC = \{1, 2\} , maxacc(\tau_{18}) = 1$$

(19) 
$$\tau_{19}: [R, 1] => [S, 1]$$
  
 $minsup(\tau_{19}) = 0$ ,  $maxsup(\tau_{19}) = \frac{1}{5}$ ,  $INACC = \{2\}$ ,  $maxacc(\tau_{19}) = 1$ 

(20) 
$$\tau_{20}: [R,1] => [S,2]$$

$$minsup(\tau_{20}) = 0 , maxsup(\tau_{20}) = 0$$

(21) 
$$\tau_{21}: [R, 1] => [S, 3]$$
 
$$minsup(\tau_{21}) = 0 , maxsup(\tau_{21}) = \frac{1}{5} , INACC = \{2\} , maxacc(\tau_{21}) = 1$$

(22) 
$$\tau_{22}: [R,2] => [S,1]$$

$$\mathit{minsup}(\tau_{22}) = 0 \ , \ \mathit{maxsup}(\tau_{22}) = 0$$

(23) 
$$\tau_{23}: [R, 2] => [S, 2]$$

$$minsup(\tau_{23}) = 0$$
,  $maxsup(\tau_{23}) = 0$ 

(24) 
$$\tau_{24}: [R,2] => [S,3]$$

$$minsup(\tau_{24}) = \frac{1}{5}$$
,  $OUTACC = \{\}$ ,  $maxsup(\tau_{24}) = 1$ 

(25) 
$$\tau_{25}: [R,3] => [S,1]$$

$$minsup(\tau_{25}) = 0$$
,  $maxsup(\tau_{25}) = \frac{3}{5}$ ,  $INACC = \{2\}$ ,  $maxacc(\tau_{25}) = 1$ 

(26) 
$$\tau_{26}: [R,3] => [S,2]$$

$$minsup(\tau_{26}) = 0$$
,  $maxsup(\tau_{26}) = \frac{2}{5}$ ,  $INACC = \{\}$ ,  $maxacc(\tau_{26}) = 1$ 

(27) 
$$\tau_{27}: [R,3] => [S,3]$$

$$minsup(\tau_{27}) = 0$$
,  $maxsup(\tau_{27}) = \frac{2}{5}$ ,  $INACC = \{2,4\}$ ,  $maxacc(\tau_{27}) = \frac{1}{2}$ 

(28) 
$$\tau_{28}: [P,1] \wedge [Q,3] => [S,3]$$

$$\inf([P,1] \wedge [Q,3]) = \{4\}, \sup([P,1] \wedge [Q,3]) = \{4\} \downarrow \emptyset$$

$$minsup(\tau_{28}) = \frac{1}{5}$$
,  $OUTACC = \{\}$ ,  $minacc(\tau_{28}) = 1$ 

以上より,  $support \ge 0.2$ ,  $accuracy \ge 0.8$  を満たす Possible rule は,

$$[P,1] => [S,3]$$
,  $[P,2] => [S,1]$ ,  $[P,2] => [S,3]$ ,  $[Q,1] => [S,1]$ ,  $[Q,1] => [S,2]$ 

$$[Q,2] => [S,1] \;,\; [Q,2] => [S,2] \;,\; [Q,3] => [S,3] \;,\; [R,1] => [S,1] \;,\; [R,1] => [S,3]$$

$$[R,2] => [S,3] , [R,3] => [S,1] , [R,3] => [S,2]$$

であり、Certain rule は、

$$[R,2] => [S,3] \ , \ [P,1] \wedge [Q,3] => [S,3]$$

である.