Assignment-01

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COURSE: CSC354 – ML – Concept Learning

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Question-01: Using Candidate-Elimination algorithm, find (manually) the set of all hypotheses consistent with the following training instances. Show step-by-step complete working of the algorithm.

Origin	Manufacturer	Color	Decade	Type	Target
Japan	Honda	Blue	1980	Economy	+
Japan	Toyota	Green	1970	Sports	-
Japan	Toyota	Blue	1990	Economy	+
USA	Chrysler	Red	1980	Economy	-
Japan	Honda	White	1980	Economy	+

SOL:

S0: <ø,ø,ø,ø,ø>

G0: <?,?,?,?,?>

Training Instances Example 01:

X1=<Japan,Honda,Blue,1980,Economy> (+ve)

S1=<Japan,Honda,Blue,1980,Economy>

G1=<?,?,?,?,?>

Training Instances Example 02:

X2=<Japan,Toyota,Green,1970,Sports> (-ve)

S2=<Japan,Honda,Blue,1980,Economy>

G2= <?,Honda,?,?,?>, <?,?,Blue,?,?>,
<?,?,?,1980,?>, <?,?,?,?,Economy>

Training Instances Example 03:

X3=<Japan,Toyota,blue,1990,Economy> (+ve)

S3=<Japan,?,Blue,?,Economy>

G3=<?,?,Blue,?,?>,<?,?,?,?,Economy>

Training Instances Example 04:

X4=<USA,Chryler,Red,1980,Economy> (-ve)

S4=<Japan,?,Blue,?,Economy>

G4=<Japan,?,Blue,?,?>,<Japan,?,?,?,Economy>,<?,?,
Blue,?,Economy>

Training Instances Example 05:

X5=<Japan,Honda,White,1980,Economy> (+ve)

S5=<Japan,?,?,?,Economy>

G5=<Japan,?,?,?,Economy>

Question 02: Using Find-S algorithm, find (manually) a hypothesis that is consistent with the following dataset. Show stepby-step complete working of the algorithm.

Face Shape	Eyes Shape	Nose Shape	Hairs	Face Color	Expression
Circle	Circle	Triangle	Yes	Pink	Happy(+ve)
Square	Square	Square	Yes	Green	Sad(-ve)
Circle	Square	Triangle	Yes	Yellow	Happy(+ve)
Circle	Circle	Triangle	No	Green	Sad(-ve)
Circle	Square	Square	Yes	Yellow	Happy(+ve)

SOL:

BY FIND-S ALOGRITHM:

H0= <ø,ø,ø,ø,ø,ø>

EX 01: <Circle,Circle,Triangle,Yes,Pink> (+ve)

H1 = <Circle,Circle,Triangle,Yes,Pink>

EX 02: <Square,Square,Square,Yes,Green> (-ve) ignore

H2 = <Circle,Circle,Triangle,Yes,Pink>

EX 03: <Circle,Square,Triangle,Yes,Yellow> (+ve)

H3=<Circle,?,Triangle,Yes,?>

EX 04: <Circle,Circle,Triangle,No,Green>(-ve)
igonre
H4=<Circle,?,Triangle,Yes,?>

EX 05: <Circle,Square,Square,Yes,Yellow> (+ve)
H5= <Circle,?,?,Yes,?>