

EC60091 : M1 ES

18EE10054

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Assignment - 1

1. Applying find-s algorithm on the following training set to find maximally specific algorithm.

i) Initializing to most specific hypothesis in H

$$h_0 = \langle \emptyset, \emptyset, \emptyset, \emptyset, \emptyset \rangle$$

Considering only the examples 1, 3 and 5

<u>Ex-1</u> → EYES	NOSE	HEAD	FACE-COLOR	HAIR	SMILE
round	triangle	round	purple	black	Y

$$h_1 = \langle \text{round}, \text{triangle}, \text{purple}, \text{black} \rangle$$

Ex-2 → ignore. $h_2 = h_1$

<u>Ex-3</u> →	square	triangle	round	yellow	black	Y
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$$h_3 = \langle ?, \text{triangle}, \text{round}, ?, \text{black} \rangle$$

Ex-4 \rightarrow ignore, $h_4 = h_3$

Ex-5 square | square | round | yellow | black | y

$$h_5 = \langle ?, ?, \text{round}, ?, \text{black} \rangle$$

? . Using candidate elimination algorithm to find a consistent dataset.

Example	Citations	Size	In Library	Price	Editors	Buy(T)
1	Some	Small	No	Affordable	One	N
2	Many	Big	No	Expensive	Many	y
3	Many	Medium	No	Affordable	Few	y
4	Many	Small	No	Expensive	Many	y

$S_b = \langle \emptyset, \emptyset, \emptyset, \emptyset, \emptyset \rangle$: Most specific hypothesis

$G_b = \langle ?, ?, ?, ?, ? \rangle$: Most general hypothesis

Ex-1

$$S_1 = \langle \emptyset, \emptyset, \emptyset, \emptyset, \emptyset \rangle$$

$$G_0 = \{ \langle \text{many}, ?, ?, ?, ? \rangle, \langle ?, \text{medium}, ?, ?, ? \rangle, \langle ?, \text{big}, ?, ?, ? \rangle,$$

$\langle ?, ?, ?, \text{expensive}, ? \rangle$, $\langle ?, ?, ?, ?, \text{few} \rangle$,
 $\langle ?, ?, ?, ?, \text{many} \rangle \}$

Ex-2 :

$$S_2 = \langle \text{many}, \text{big}, \text{no}, \text{expensive}, \text{many} \rangle$$

$$G_2 = \{ \langle \text{many}, ?, ?, ?, ? \rangle, \langle ?, \text{big}, ?, ?, ? \rangle, \langle ?, ?, ?, \text{expensive}, ? \rangle, \\ \langle ?, ?, ?, ?, \text{many} \rangle \}$$

Ex-3 : $S_3 = \langle \text{many}, ?, \text{no}, \text{expensive}, ? \rangle$

$$G_3 = \{ \langle \text{many}, ?, ?, ?, ? \rangle, \langle ?, ?, ?, \text{expensive}, ? \rangle \}$$

Ex-4 : $S_4 = \langle \text{many}, ?, \text{no}, ?, ?, ? \rangle$

$$G_4 = \{ \langle \text{many}, ?, ?, ?, ?, ? \rangle \}$$

~~Ans.~~

Here the final hypothesis set is the version-space between
 G_4 and S_4 .

Final hypothesis set $\{ S_4, G_4 \}$