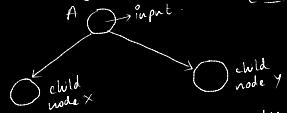


Adaptive ML model with hierarchical trees

So, hello everyone, this is Debasit Sildar
I came up with an idea to implement
a newer type of model [ML] which is more
intuitive and can learn and understand data
quite well.

I thought of using Hierarchical tree structure [BST]



where child node X and Y are sibling nodes, generating from the same parent A.

Node with const
 $\textcircled{1} \rightarrow$ input
 $\textcircled{2} \rightarrow$ output
 $\textcircled{3} \rightarrow$ id
 $\textcircled{4} \rightarrow$ lowest [more like leaves]
 $\textcircled{5} \rightarrow$ highest [more like highest]

Suppose the example

Worsest data

Input	Outputs
1 → 10	Best [1]
11 → 20	Good [2]
21 → 30	Average [3]
31 → 40	Bad [4]
41 → 50	Worst [5]

So, how do we do the same for multifeatured classification?

Suppose the dataset was,

X	Y	Z
1	2	7
-1	2	1
-1	4	0

Suppose Z \rightarrow (output)
can be [1, 2, 3, 4, 5]

Suppose equation

$$f(x, y) = 3x + 2y$$

lets see, how we can add these.

Input 1	Input 2	Output
1	2	7
-1	2	1
-1	4	0
1	1	3
1	3	5
1	5	7
-1	1	1
-1	3	3
-1	5	5
2	2	6
2	4	8
2	6	10
2	8	12
3	2	9
3	4	11
3	6	13
3	8	15
4	2	12
4	4	14
4	6	16
4	8	18
5	2	15
5	4	17
5	6	19
5	8	21
6	2	18
6	4	20
6	6	22
6	8	24
7	2	21
7	4	23
7	6	25
7	8	27

Example run [classification for 1 feature]



So probably,

tree is empty

1st \rightarrow $\textcircled{1}$

2nd \rightarrow 1st input goes in $\textcircled{1}$

(23)

Since nothing is there,
leaves are formed.

every node will have
two leaves since it's a
BFT



3rd \rightarrow 2nd input goes in 19

we search the tree;

we range in 23. we know 19 should
be in the lowest of 23

now, test:

24 \rightarrow it's closest to
23, i.e. $P(24)$ $\in P(23)$

output \rightarrow 3 ✓

43 \rightarrow in range 47
output \rightarrow 5 ✓

50 \rightarrow is a node
output \rightarrow 5 ✓

12 \rightarrow is note closest
is 19. $P(12) \cap$
 $P(19)$ as it's nearer.

output \rightarrow 2 ✓

Model can learn hypothetical situations

23	19	3	47
43	39	46	53

So this is the model
after a hypothetical condition
such that it can also learn
abnormal inputs

Model can classify based on a single input to multiple output
with a very good accuracy