

Multiclass using Logistic Regression

Logistic Regression for Multiclass Classification

ID	AGE	Has_Smartphone?
1	2	0
2	33	1
3	7	0
4	25	1
5	4	0
6	48	1

Logistic Regression for Multiclass Classification

ID	AGE	Has_Smartphone?
1	2	0
2	33	1
3	7	0
4	25	1
5	4	0
6	48	1

ID	AGE	Number of phones
1	2	A
2	33	C
3	7	A
4	25	C
5	4	A
6	48	B

Logistic Regression for Multiclass Classification

ID	AGE	Has_Smartphone?
1	2	0
2	33	1
3	7	0
4	25	1
5	4	0
6	48	1

ID	AGE	Number of phones
1	2	A
2	33	C
3	7	A
4	25	C
5	4	A
6	48	B

A - no smartphone

B - 1 smartphone

C - 2 or more smartphones

Logistic Regression for Multiclass Classification

ID	AGE	Has_Smartphone?
1	2	0
2	33	1
3	7	0
4	25	1
5	4	0
6	48	1

ID	AGE	Number of phones
1	2	A
2	33	C
3	7	A
4	25	C
5	4	A
6	48	B

A - no smartphone

B - 1 smartphone

C - 2 or more smartphones

One-vs-All

One Versus All Method

ID	AGE	Number of phones
1	2	A
2	33	C
3	7	A
4	25	C
5	4	A
6	48	B

One Versus All Method

ID	AGE	Number of phones
1	2	A
2	33	C
3	7	A
4	25	C
5	4	A
6	48	B

ID	AGE	Class A
1	2	1
2	33	0
3	7	1
4	25	0
5	4	1
6	48	0

ID	AGE	Class B
1	2	0
2	33	0
3	7	0
4	25	0
5	4	0
6	48	1

ID	AGE	Class C
1	2	0
2	33	1
3	7	0
4	25	1
5	4	0
6	48	0

One Versus All Method

ID	AGE	Number of phones
1	2	A
2	33	C
3	7	A
4	25	C
5	4	A
6	48	B

ID	AGE	Class A
1	2	1
2	33	0
3	7	1
4	25	0
5	4	1
6	48	0

ID	AGE	Class B
1	2	0
2	33	0
3	7	0
4	25	0
5	4	0
6	48	1

ID	AGE	Class C
1	2	0
2	33	1
3	7	0
4	25	1
5	4	0
6	48	0

One Versus All Method

ID	AGE	Number of phones
1	2	A
2	33	C
3	7	A
4	25	C
5	4	A
6	48	B

ID	AGE	Class A
1	2	1
2	33	0
3	7	1
4	25	0
5	4	1
6	48	0

ID	AGE	Class B
1	2	0
2	33	0
3	7	0
4	25	0
5	4	0
6	48	1

ID	AGE	Class C
1	2	0
2	33	1
3	7	0
4	25	1
5	4	0
6	48	0

One Versus All Method

ID	AGE	Number of phones
1	2	A
2	33	C
3	7	A
4	25	C
5	4	A
6	48	B

ID	AGE	Class A
1	2	1
2	33	0
3	7	1
4	25	0
5	4	1
6	48	0

ID	AGE	Class B
1	2	0
2	33	0
3	7	0
4	25	0
5	4	0
6	48	1

ID	AGE	Class C
1	2	0
2	33	1
3	7	0
4	25	1
5	4	0
6	48	0

One Versus All Method

ID	AGE	Number of phones
1	2	A
2	33	C
3	7	A
4	25	C
5	4	A
6	48	B

ID	AGE	Class A
1	2	1
2	33	0
3	7	1
4	25	0
5	4	1
6	48	0

ID	AGE	Class B
1	2	0
2	33	0
3	7	0
4	25	0
5	4	0
6	48	1

ID	AGE	Class C
1	2	0
2	33	1
3	7	0
4	25	1
5	4	0
6	48	0

One Versus All Method

ID	AGE	Number of phones	P(A)	P(B)	P(C)
1	2	A	0.92	0.12	0.09
2	33	C	0.33	0.17	0.94
3	7	A	0.83	0.11	0.10
4	25	C	0.14	0.40	0.88
5	4	A	0.87	0.23	0.21
6	48	B	0.21	0.79	0.39

One Versus All Method

ID	AGE	Number of phones	P(A)	P(B)	P(C)	Class
1	2	A	0.92	0.12	0.09	A
2	33	C	0.33	0.17	0.94	C
3	7	A	0.83	0.11	0.10	A
4	25	C	0.14	0.40	0.88	C
5	4	A	0.87	0.23	0.21	A
6	48	B	0.21	0.79	0.39	B