

Live | DSML Advanced : Pro X Probability2.ipynb - Colaboratory X +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

DSML Advanced : Probability and Statistics - 2 | Lecture

Q1 Tossing n-coins prob all coins turn up as heads

You are sharing your screen now Stop Sharing

1st coin ... 2nd coin

Srikanth Varma Chekuri (You) (Screen)

00:11:21

00:00

57 People

Chat

Questions

Start Doubt Session

To: Everyone Enable/Disable Chat

Type message

GEOMRTT

Srikanth Varma Chekuri (You)

Notify me about Nothing

neha To: Everyone 9:08 pm

Pin a message

Abhishek Singh To: Everyone 9:08 pm

joint prob

Mahesh Kumar To: Everyone 9:08 pm

all are independent

Avijit Swain To: Everyone 9:09 pm

Independent Events

Yes No

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E₁: 1st coin is H

E₂: 2nd coin is H

E_n: nth coin is H

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Srikanth Varma Chekuri (You) (Screen)

00:11:27

as
independent
of one
another

GEOMRTT

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

• neha To: Everyone 9:08 pm

Pin a message +

• Abhishek Singh To: Everyone 9:08 pm

joint prob

• Mahesh Kumar To: Everyone 9:08 pm

all are independent

• Avijit Swain To: Everyone 9:09 pm

Independent Events

Yes No

To: Everyone Enable/Disable Chat

Type message

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Questions

2 / 4

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00

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joint prob

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all are independent

Avijit Swain To: Everyone 9:09 pm

Independent Events

Start Doubt Session

Yes No

To: Everyone Enable/Disable Chat

Type message

56 People

Chat

Questions

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* GEOMRTT Srikanth Varma Chekuri (You) (Screen)

00:11:31

$P(E_1 \cap E_2 \cap E_3 \dots \cap E_n) = P(E_1) P(E_2) \dots P(E_n)$

$P(A \cap B) = P(A|B) \cdot P(B)$

$= P(A) \cdot P(B)$

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SEOMRTT

$P(E_1)P(E_2) \dots P(E_n)$

\downarrow

$\frac{1}{2} \cdot \frac{1}{2} \dots \frac{1}{2}$

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Srikanth Varma Chekuri (You) (Screen)

00:12:01

4 / 4

OK 00

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

neha To: Everyone 9:08 pm Pin a message

Abhishek Singh To: Everyone 9:08 pm joint prob

Mahesh Kumar To: Everyone 9:08 pm all are independent

Avijit Swain To: Everyone 9:09 pm Independent Events

Yes No

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Given: $m_1, s \rightarrow m_1 \text{ & } s \text{ are independent}$

medicine 1 is given

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then:

$m_1^c \text{ & } s \text{ are also indep}$

↳ m_1 is not given

Srikanth Varma Chekuri (You) (Screen)

00:15:53

5 / 5

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

9:13 pm

9:13 pm

2

Siddarth Gajjar To: Everyone 9:14 pm

just a perfect explanation.

Harpreet Singh To: Me 9:16 pm

yes

1 GEOMRTT Yes thumb up No thumb down

To: Everyone Enable/Disable Chat

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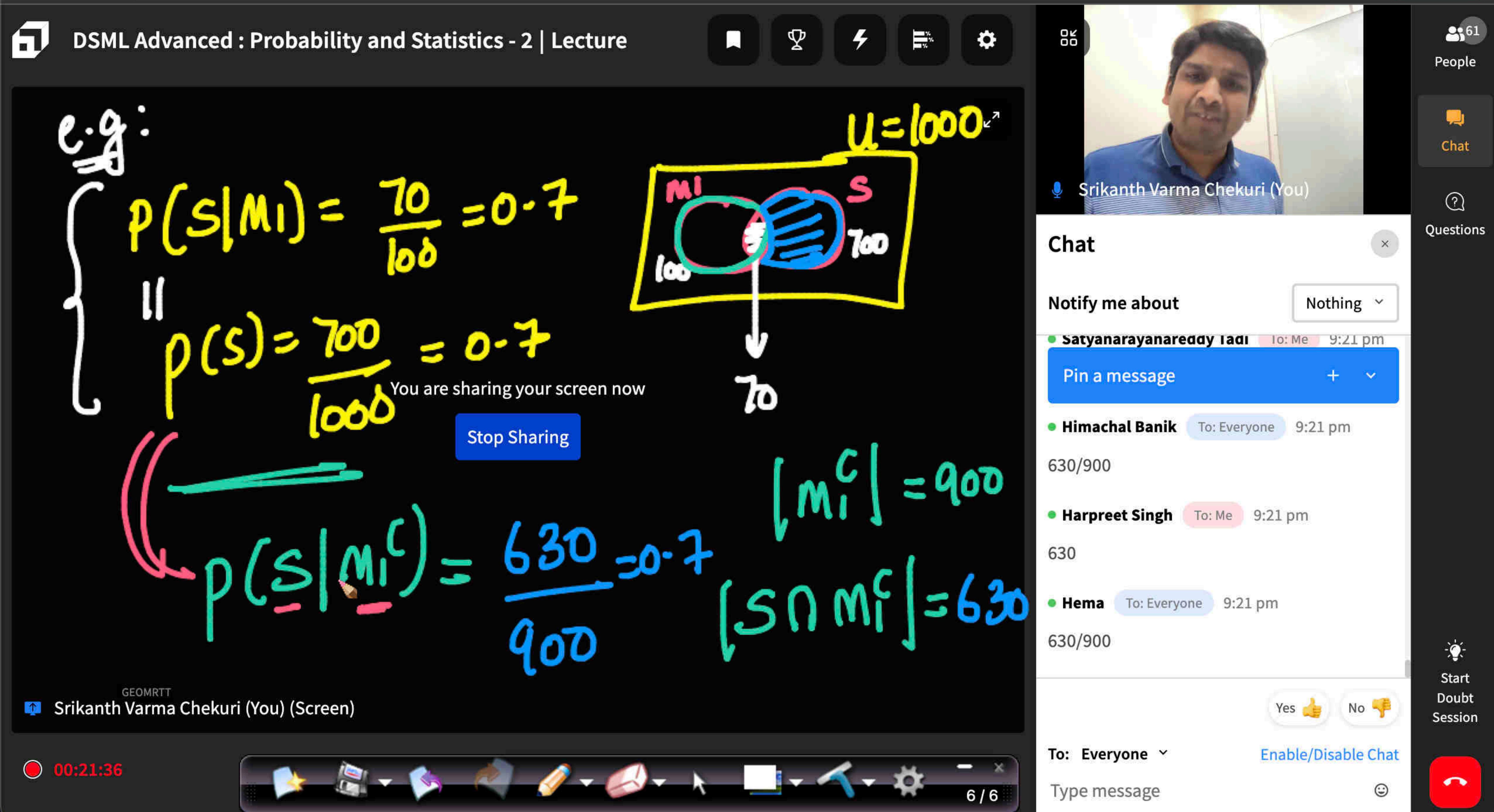
Start Doubt Session

58 People

Chat

Questions

Start Doubt Session



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Task: without numbers
→ set theory
Challenge

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Srikanth Varma Chekuri (You) (Screen)

00:23:23

OK 00

GEOMRTT

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Himachal Panik To: Everyone 9:21 pm

Pin a message +

Harpreet Singh To: Me 9:21 pm

630

Hema To: Everyone 9:21 pm

630/900

9:22 pm

9

Start Doubt Session

To: Everyone Enable/Disable Chat

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People 60

Chat

Questions

7 / 7

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Q Expt: Toss a coin and throw a dice }

E: The coin is H

F: The dice is 3

ENF

Q Are E & F independent =

Srikanth Varma Chekuri (You) (Screen)

00:30:17

1 People

Chat

Notify me about Nothing

Adith Patel To: Everyone 9:30 pm Pin a message +

Pavan To: Everyone 9:30 pm 1/2 9:30 pm 1

Pavan To: Everyone 9:30 pm 1/2 9:30 pm 1

Start Doubt Session

To: Everyone Enable/Disable Chat

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8 / 10

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GEOMRTT

Expt = coin toss & dice throw

{ (H, 1), (H, 2), (T, 1), (T, 2) } = S

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✓ H 3 ✓ T 3 ; ; }

2 × 6 = 12 outcomes

Srikanth Varma Chekuri (You) (Screen)

00:35:07

9 / 12

OK 00

People 61

Chat

Questions

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message +

Pavan To: Everyone 9:34 pm

there is any logic to tell this without calculation

Pavan To: Everyone 9:35 pm

like this type of experiments

9:35 pm

1

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Yes Yes No No

Update :

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If $P(E|F) = P(E)$ Then $E \& F$ are indep

$\checkmark P(E \cap F) = P(E)P(F)$

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$\frac{1}{2} = \frac{1}{2} = P(E)$

GEOMRT Srikanth Varma Chekuri (You) (Screen)

00:31:40

00:00

10 / 10

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message +

9:31 pm

9

Mohit Sharma To: Me 9:31 pm

yes

9:31 pm

1

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To: Everyone Enable/Disable Chat

Type message

62 People

Chat

Questions

Start Doubt Session

Yes No

Enable/Disable Chat

Type message

Update

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Q Expt: coin toss & dice throw

E: coin is H | F: dice is 3

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Q are E & F mutually exclusive

NO

$E \cap F = \emptyset$

Srikanth Varma Chekuri (You) (Screen)

00:34:53

11 / 12

00:00

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

Pavan To: Everyone 9:34 pm
no

Pavan To: Everyone 9:34 pm
there is any logic to tell this without calculation

GEOMRTT Yes No

To: Everyone Enable/Disable Chat

Type message

Start Doubt Session

61 People

Chat

Questions

Start Doubt Session

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GEOMRTT

E: $\{(H_1, 1), (H_1, 2), (H_1, 3), \dots, (H_1, 6)\}$

F: $\{(H_2, 3), (I_2, 3)\}$

You are sharing your screen now

Stop Sharing

$E \cap F = \{ (H_1, 3) \} \neq \emptyset$

Srikanth Varma Chekuri (You) (Screen)

00:36:04

12 / 13

00:00

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

9:35 pm

4

Mohit Sharma To: Me 9:36 pm

why h3 is not there in first?

9:36 pm

3

Start Doubt Session

To: Everyone Enable/Disable Chat

Type message

62 People

Chat

Questions

Yes No

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A & B are two arbitrary events

always TRUE

~~1 $P(A \cap B) = P(A) P(B)$~~

~~2 $P(A \cup B) = P(A) + P(B)$~~

~~3 $P(A|B) = P(A \cap B) / P(B)$~~

4 $P(A \cup B) \leq P(A) + P(B)$ ✓

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Srikanth Varma Chekuri (You) (Screen)

00:43:30

00:00

13 / 18

Chat

Notify me about Nothing

Pavan To: Everyone 9:43 pm Pin a message

Anil Kumar To: Everyone 9:43 pm

Yes

Nandagopal M To: Everyone 9:43 pm YOU ARE RIGHT

Biswaroop Banerjee To: Me 9:43 pm you have to + to the lhs

Start Doubt Session

To: Everyone Enable/Disable Chat

Type message

6

Yes No

People 63

Chat

Questions

Scalera

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00:39:58

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① $p(A \cap B) = p(A)p(B)$

$\hookrightarrow p(A|B)p(B)$

only if A & B are independent

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Nikhil Rane To: Me 9:39 pm

Sreenath Sankar To: Everyone 9:39 pm

Hrishabh Amrodia To: Me 9:39 pm

Ashwanth Unni To: Everyone 9:39 pm

To: Everyone Enable/Disable Chat

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Start Doubt Session

GEOMRTT Yes Thumbs Up No Thumbs Down

62 People

Chat

Questions

14 / 14

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② $p(A \cup B) = p(A) + p(B)$

$\hookrightarrow p(A) + p(B) - p(A \cap B)$

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Only if A & B are mutually excl

00:41:15

63 People

GEOMRTT Chat

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

Avijit Swain To: Everyone 9:41 pm
for mutually exclusive only

Ankit Anand To: Everyone 9:41 pm
only when mutually exclusive

Pavan To: Everyone 9:41 pm
mutual exclusive

Start Doubt Session

To: Everyone Enable/Disable Chat

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Yes No

15 / 15

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3 $p(A|B) = p(A \cap B)/p(B)$

if $p(B) \neq 0$

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Srikanth Varma Chekuri (You) (Screen)

00:41:51

00:00

16 / 16

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

Avijit Swain To: Everyone 9:41 pm
for mutually exclusive only

Ankit Anand To: Everyone 9:41 pm
only when mutually exclusive

Pavan To: Everyone 9:41 pm
mutual exclusive

GEOMRTT Yes Thumbs Up No Thumbs Down

To: Everyone Enable/Disable Chat

Type message

Start Doubt Session

63 People

Chat

Questions

Start Doubt Session

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Update

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Stop Sharing

Srikanth Varma Chekuri (You) (Screen)

00:42:14

Chat

Notify me about Nothing

Pin a message

Avijit Swain To: Everyone 9:41 pm
for mutually exclusive only

Ankit Anand To: Everyone 9:41 pm
only when mutually exclusive

Pavan To: Everyone 9:41 pm
mutual exclusive

Start Doubt Session

To: Everyone Enable/Disable Chat

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17 / 17

People 63

Chat

Questions

Start Doubt Session

Yes No

GEOMRTT

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00 00

④ $P(A \cup B) \leq P(A) + P(B)$

0.4

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$P(A) + P(B) - P(A \cap B)$

0.2 0.3 0.1

GEOMRTT

Srikanth Varma Chekuri (You) (Screen)

00:45:37

18 / 19

Ankit Anand

People

Srikanth Varma Chekuri (Host, You)

Ankit Anand Raised hand

AG Aahan Gupta

Abdul Ahad

AC Abhishek Chopra

Abhishek GC

Abhishek Singh

Start Doubt Session

62 People

Chat

Questions

Update

18 / 19

Bayes theorem



{ real-world,
applications
(cont.)

interviews

ML: Naive Bayes;
Bayesian
ML

Bayes - Thm → algebra (2-3 steps)

→ real-world example (cont.)

→ assignments (...)

↳ practise

~~Algebra:~~

Def:

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$\neg P(B) \neq 0$

$$P(A \cap B) = P(B \cap A) = P(B|A)P(A)$$

Def:

$$\underline{P(A) \neq 0}$$

Bayes Thm:

$$\{ P(\tilde{A}|B) = \frac{P(B|A) P(A)}{P(B)} ; P(A) \neq 0 ; P(B) \neq 0 \}$$

practical

Pfizer

Rapid RT-PCR (5 min)

Test results in +ve if patient has covid

→ Test results in +ve if patient does not have covid

real-world:

$P(C+ve|C)$

90%

10%
 $P(C+ve|NC)$

ICMR Lotto

(Let) In whole population; $P(C)$ of people have covid $\rightarrow P(C)$

Q Probability that a person actually has covid if rapid PCR test gives a +ve result!

+ve

I

define
events

II

$$P(C \sim | +ve) = ?$$

III



$$\left\{ \begin{array}{l} P(+ve|C) = 0.9 \\ P(+ve|NC) = 0.1 \\ P(C) = 0.01 \end{array} \right.$$

(4)

$$P(C|+ve) = \frac{P(+ve|C) \cdot P(C)}{P(+ve)}$$

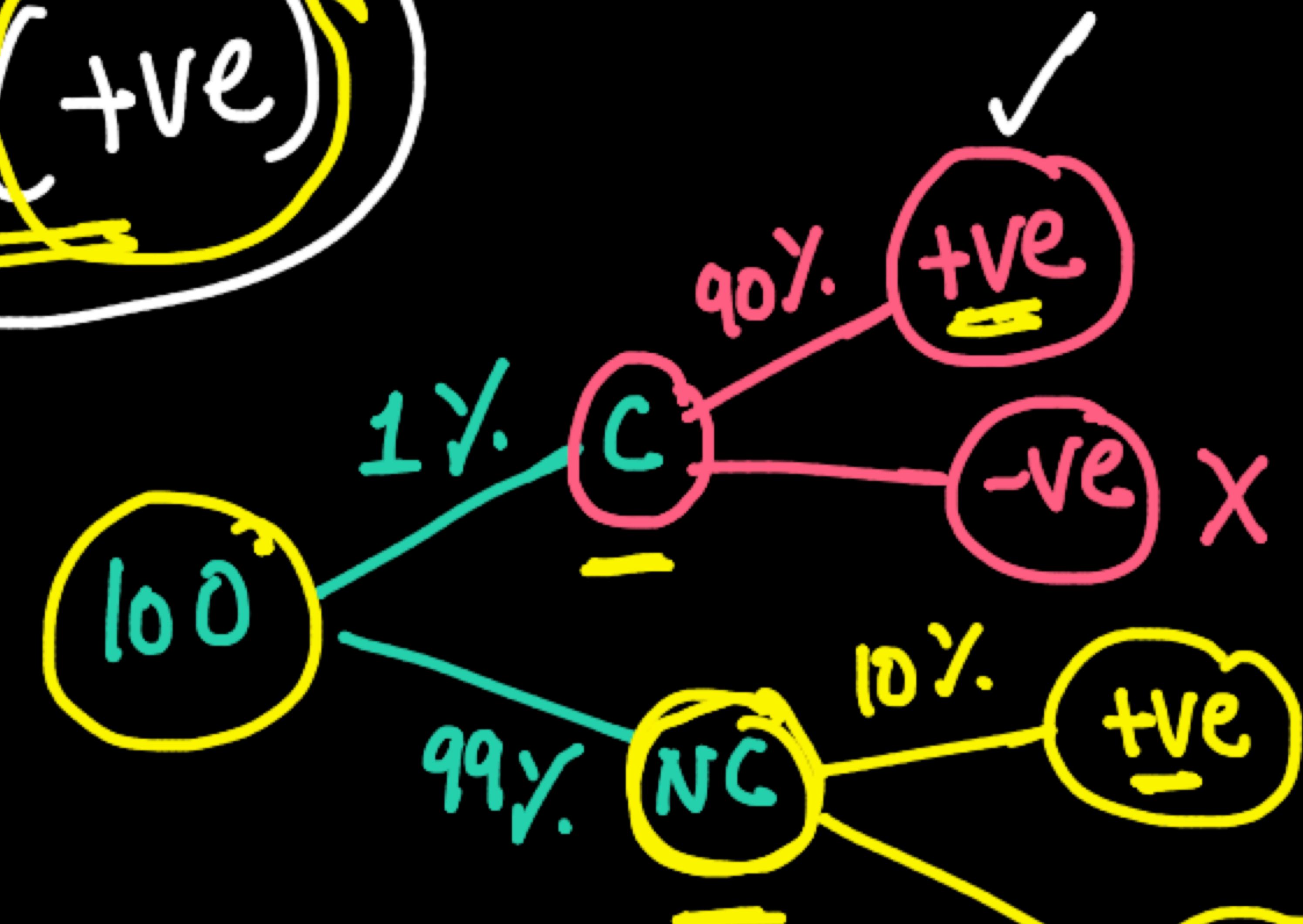
0.108

$$= \frac{9}{108}$$



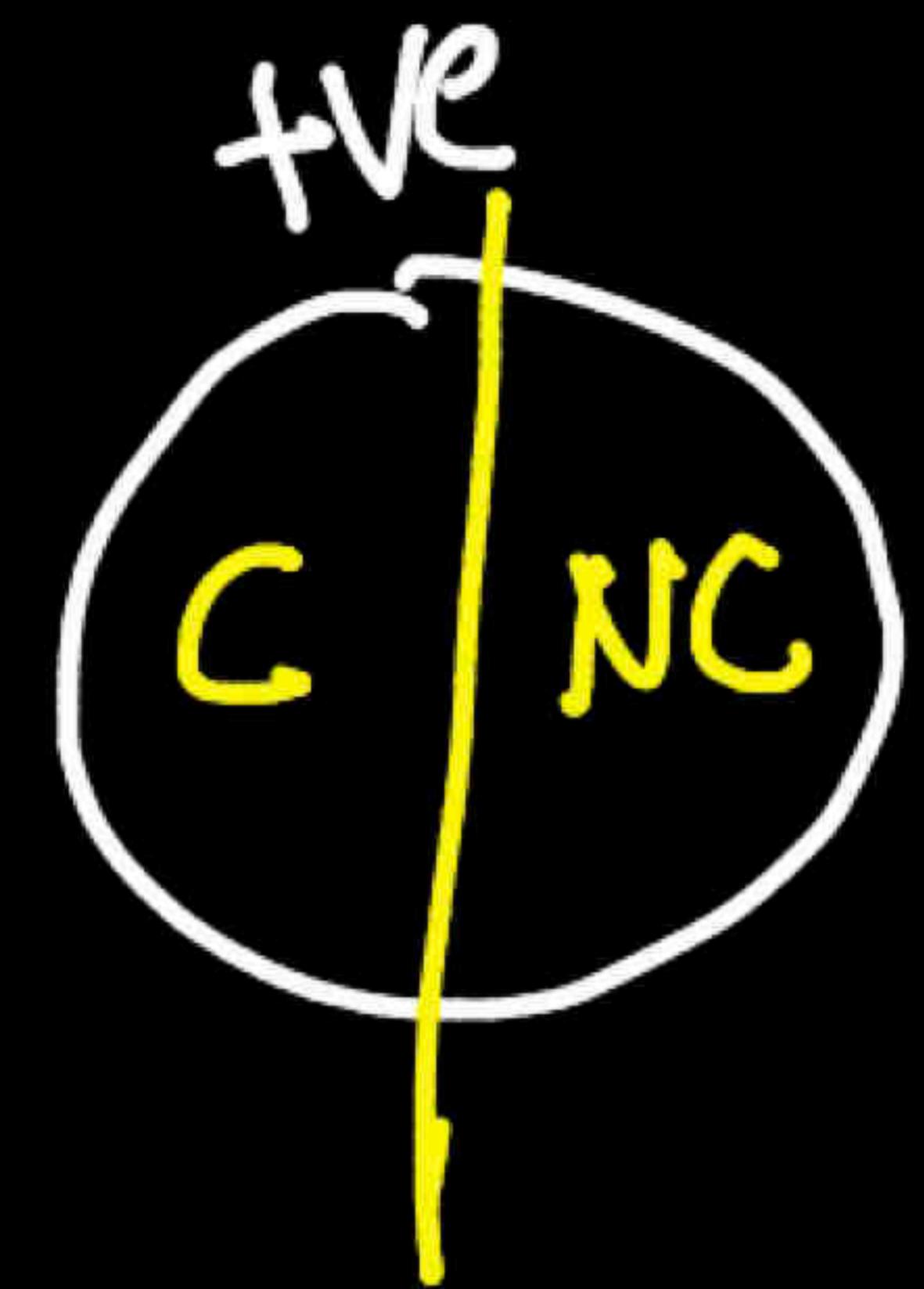


$p(+ve|c)$



$p(+ve|nc)$

$$\text{~~~} P(+ve) = \underline{\underline{p(+ve \cap c)}} + \underline{\underline{p(+ve \cap nc)}}$$



Pop → C ly.
→ NC qy.

$$\begin{aligned}
 p(\underline{\underline{+ve}}) &= p(+ve \cap C) + p(+ve \cap NC) \\
 &= p(+ve | C) \frac{p(C)}{p(C)} + p(+ve | NC) \frac{p(NC)}{p(NC)} \\
 &\quad \downarrow \qquad \swarrow \\
 &= 0.9 \times \underline{\underline{0.01}} + \underline{\underline{0.1}} \times \underline{\underline{0.99}}
 \end{aligned}$$



Google

9/108

X



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About 21,30,000 results (0.36 seconds)

0.08333333333

8-333%

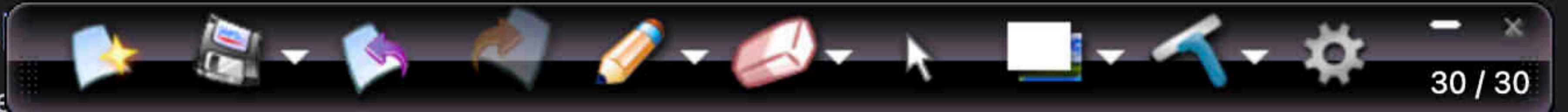


More info

<https://www.law.cornell.edu> › ucc › 9-108

⋮

9-108. SUFFIC



A description of collate

30 / 30

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Srikanth Varma Chekuri (You) (Screen)

01:15:43

GEOMRTT

P(C/-ve)

Chat

Notify me about Nothing

Pin a message +

vikas To: Everyone 10:15 pm P(C/-ve) will be really low

vikas To: Everyone 10:15 pm right?

10:15 pm

3

Start Doubt Session

To: Everyone Enable/Disable Chat

Type message

31 / 31

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QUESTION

Ques tions

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01:16:24

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

80

GEOMRTT

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pavan To: Everyone 10:15 pm Pin a message +

vikas To: Everyone 10:15 pm P(C/-ve) will be really low

vikas To: Everyone 10:15 pm right?

10:15 pm

3

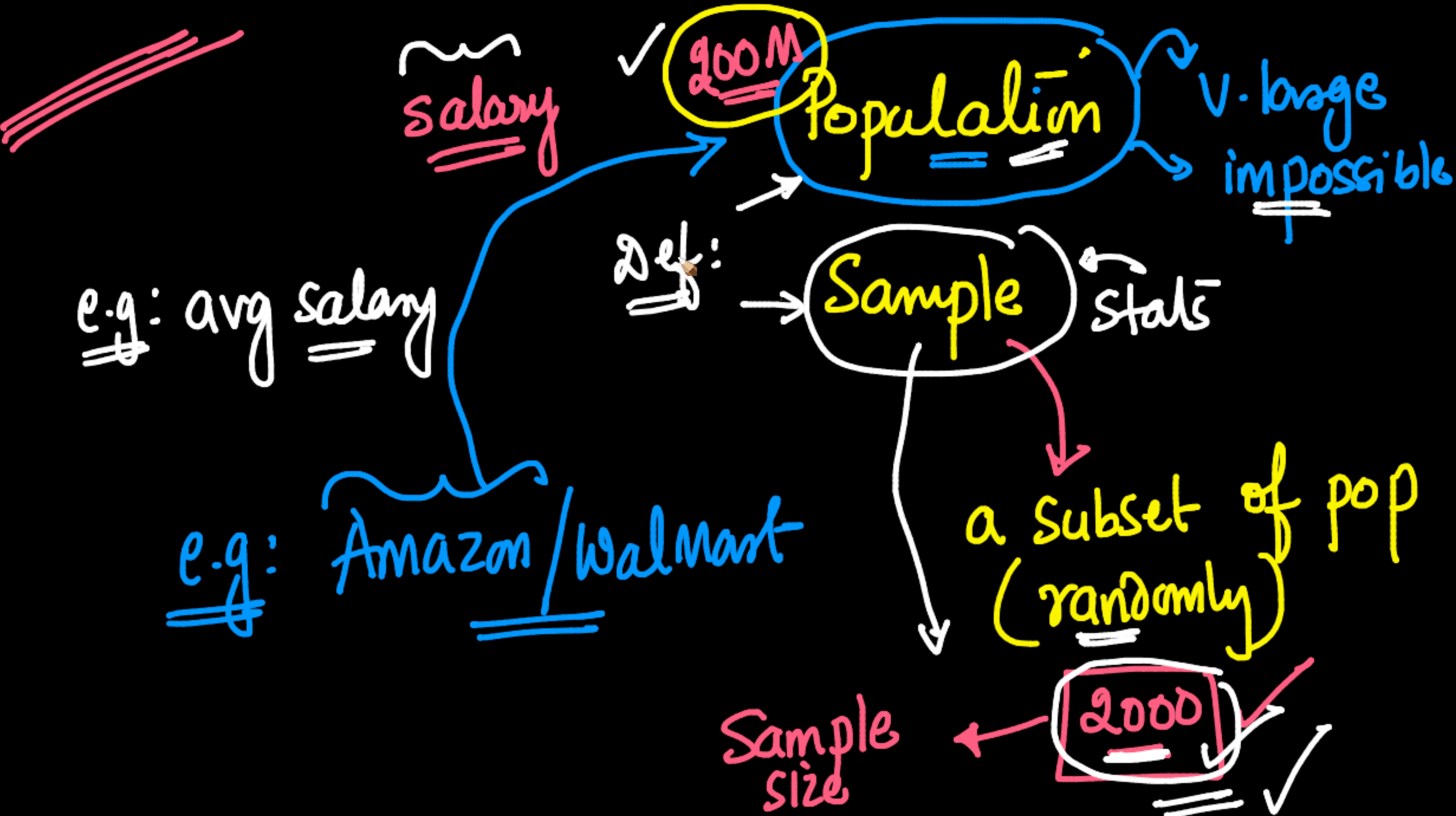
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Yes Yes No No

32 / 32



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sample ← random sample

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Srikanth Varma Chekuri (You) (Screen)

01:29:18

10:23 pm

Anil Kumar To: Everyone 10:26 pm

Always random?

Dhiman Ghosh To: Me 10:27 pm

what should be the threshold % for the sample size?

2 New Messages

Start Doubt Session

To: Everyone Enable/Disable Chat

Type message

61 People

Chat

3 Questions

34 / 34

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Stats: 

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$n \uparrow \Rightarrow$ sample-mean \rightarrow pop-mean

GEOMRTT Srikanth Varma Chekuri (You) (Screen)

01:30:30

00

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Anil Kumar To: Everyone 10:26 pm Always random?

Dhiman Ghosh To: Me 10:27 pm what should be the threshold % for the sample size? 6 New Messages

To: Everyone Enable/Disable Chat

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$n=2000$

sample-mean \approx pop. mean

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GEOMRTT

Srikanth Varma Chekuri (You) (Screen)

01:31:41

Sample Mean \approx Pop. Mean

Srikanth Varma Chekuri (You)

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Pin a message

Avijit Swain To: Everyone 10:29 pm
Using the result that we obtain from the sample, will we accept that as the population result?

Shubhang Malviya To: Everyone 10:29 pm
Mean of sample = Mean of Population?

6 New Messages

Start Doubt Session

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62 People

3 Questions

Lightbulb icon

Yes No

22:32

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as $n \rightarrow \infty$

sample-mean \rightarrow pop-mean

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Srikanth Varma Chekuri (You) (Screen)

01:32:21

00:00

GEOMRTT

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

Using the result that we obtain from the sample, will we accept that as the population result?

Shubhang Malviya To: Everyone 10:29 pm

Mean of sample = Mean of Population?

10:29 pm

2

6 New Messages

Harinadh Kunaparaju To: Me 10:29 pm

Yes No

To: Everyone Enable/Disable Chat

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Start Doubt Session

62 People

3 Questions

Start Doubt Session

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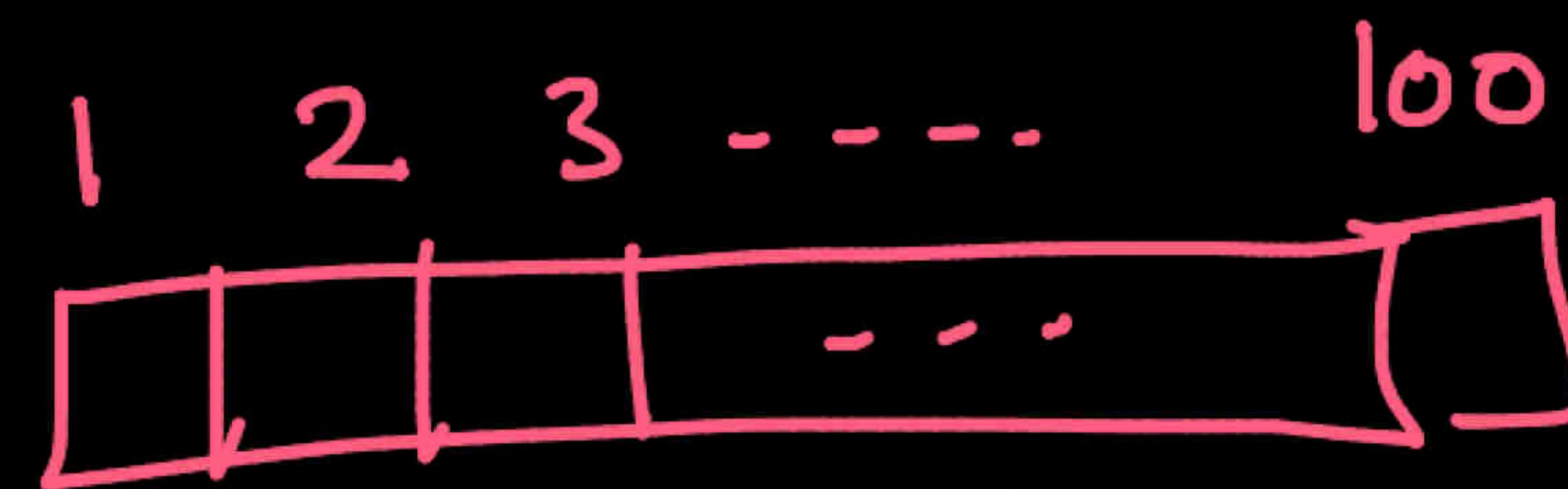
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...



Random - Sample:



5 pls randomly

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5 random elements

np.random.randint

0 1 2 ... 99

01:38:53

60 People

Chat 3 Questions

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message +

Harpreeet Singh To: Everyone 10:37 pm

Can we do by taking numbers with equal intervals.

Biswaroop Banerjee To: Me 10:38 pm

sample space reduced

Harpreeet Singh To: Everyone 10:39 pm

ok thanks

GEOMRTT Yes Thumbs Up No Thumbs Down

To: Everyone Enable/Disable Chat

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39 / 40

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0 | 2 ... 99

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20 40 60 80, 100 k

Sm 2nd form 3rd form

Srikanth Varma Chekuri (You)

GEOMRTT

People 60

Chat

Questions 3

Notify me about Nothing

Pin a message +

similarly can we randomly select rows in dataframe'

Harpreet Singh To: Everyone 10:37 pm

Can we do by taking numbers with equal intervals.

Biswaroop Banerjee To: Me 10:38 pm

sample space reduced

Start Doubt Session

Yes No

To: Everyone Enable/Disable Chat

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01:38:20

40 / 40

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200 Million
↓ randomly
2000

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Srikanth Varma Chekuri (You) (Screen)

01:39:58

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00

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

Avijit Swain To: Everyone 10:32 pm
But if you do random sampling,, there could be a scenario where we have data of only those people who are super rich, whereas our population consists of people belonging to various salary brackets. How do we deal with this issue?

vikas To: Everyone 10:32 p 1 New Message
GEOMRTT
Yes No

To: Everyone Enable/Disable Chat

Type message

Start Doubt Session

60 People

3 Questions

Start Doubt Session

Live | DSML Advanced : Pro X Probability2.ipynb - Colaboratory X +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

DSML Advanced : Probability and Statistics - 2 | Lecture

You are sharing your screen now

Stop Sharing

200 Million

2000

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Dinesh Gaddam To: Everyone 10:33 pm
is this core idea is used in Exit polls

Biswaroop Banerjee To: Me 10:34 pm
it can be skewed

kalyan alapati To: Me 10:34 pm
1 from each 20 5 New Messages

GEOMRTT Yes No

To: Everyone Enable/Disable Chat

Type message

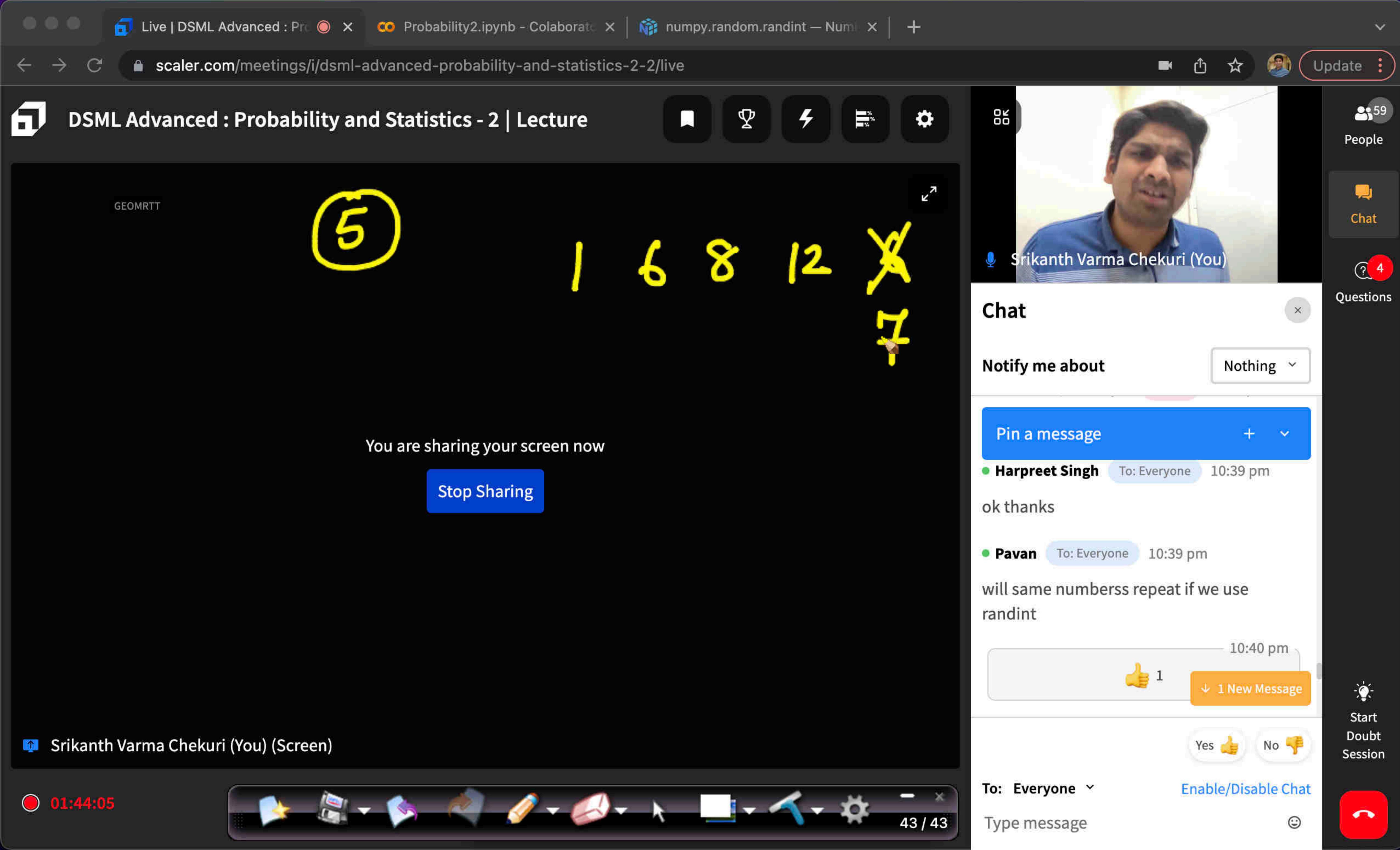
60 People

Chat 4 Questions

Start Doubt Session

01:40:49

42 / 42



Live | DSML Advanced : Pro X Probability2.ipynb - Colaboratory X numpy.random.randint — Num X +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

DSML Advanced : Probability and Statistics - 2 | Lecture

GEOMRTT

concl:
sample-mean
-sal

You are sharing your screen now

Stop Sharing

01:45:07

00:00

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

Narendra Sharma To: Everyone 10:40 pm Random sample from 1 country (developed) may not be true for people in developing or poor countries

Pavan To: Everyone 10:40 pm i think we will shuffle and pick np.shuffle()

1 New Message

Start Doubt Session

To: Everyone Enable/Disable Chat

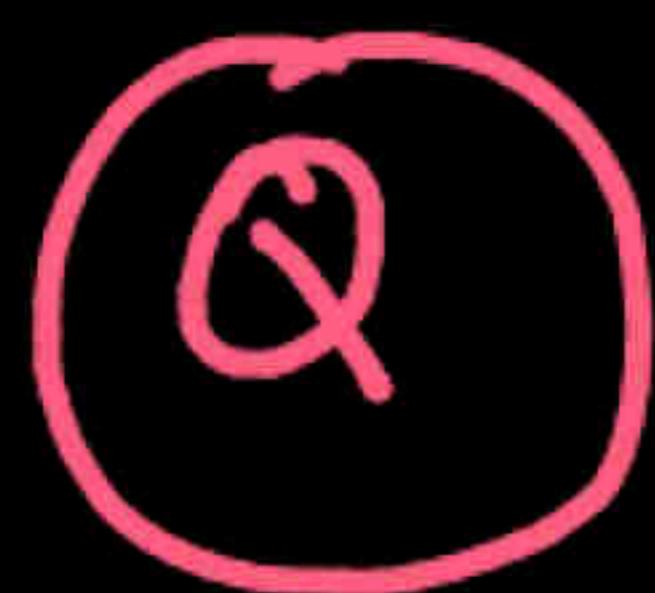
Type message

57 People

Chat 4 Questions

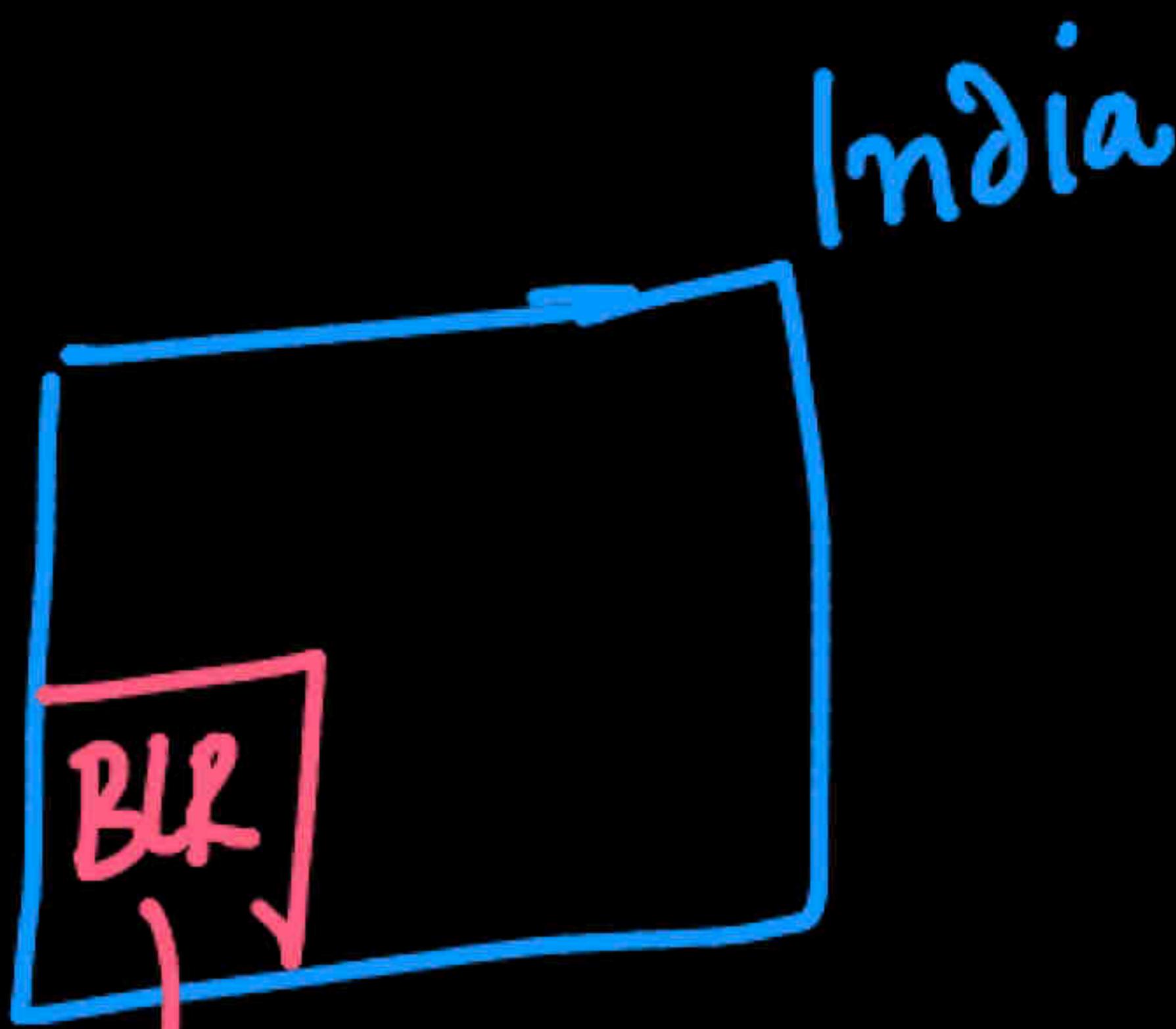
44 / 44

The image shows a live video conference interface. On the left, a shared screen displays handwritten notes: 'concl:', 'sample-mean', and '-sal'. Below these, a large yellow bracket encloses two circles, with 'US' above the top one and 'India' to its right. A blue button says 'Stop Sharing'. On the right, a video call window shows Srikanth Varma Chekuri. A chat sidebar has messages from Narendra Sharma and Pavan. A 'Doubt Session' button is at the bottom right.

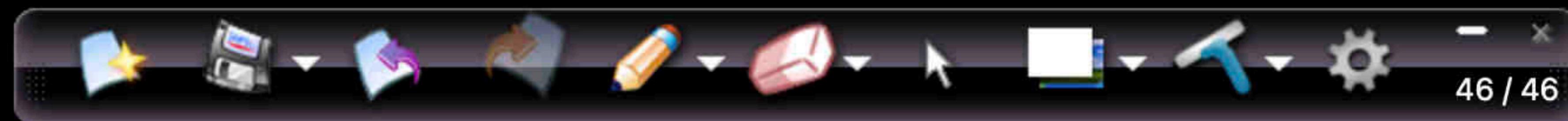


Sample- random

avg-sal-india



avg-sal-blr



Live | DSML Advanced : Pr X Probability2.ipynb - Colaboratory X numpy.random.randint — Num X +

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=YenSPTLCZ8un

Update :

+ Code + Text

✓ RAM Disk

 {x}
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt[] id = "1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe"
print("https://drive.google.com/uc?export=download&id=" + id)
https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe[] !wget "https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe"
--2022-04-21 14:01:07-- https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe
Resolving drive.google.com (drive.google.com)... 74.125.142.138, 74.125.142.102, 74.125.
Connecting to drive.google.com (drive.google.com) | 74.125.142.138 | :443... connected.
HTTP request sent, awaiting response... 303 See Other
Location: <https://doc-0k-14-docs.googleusercontent.com/docs/securesc/ha0ro937gcuc717def>
Warning: wildcards not supported in HTTP.--2022-04-21 14:01:07-- <https://doc-0k-14-docs.googleusercontent.com/docs/securesc/ha0ro937gcuc717def>

Live | DSML Advanced : Pr x Probability2.ipynb - Colaboratory x numpy.random.randint — NumPy x +

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=YenSPTLCZ8un

+ Code + Text

linux

RAM Disk

Terminal | Shell | Cmd prompt

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

```
[ ] id = "1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe"
print("https://drive.google.com/uc?export=download&id=" + id)
```

https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe

```
[ ] !wget "https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJ"
```

```
--2022-04-21 14:01:07-- https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZ
Resolving drive.google.com (drive.google.com)... 74.125.142.138, 74.125.142.102, 74.125
Connecting to drive.google.com (drive.google.com)|74.125.142.138|:443... connected.
HTTP request sent, awaiting response... 303 See Other
Location: https://doc-0k-14-docs.googleusercontent.com/docs/securesc/ha0ro937gcuc717def
Warning: wildcards not supported in HTTP.
--2022-04-21 14:01:09-- https://doc-0k-14-docs.googleusercontent.com/docs/securesc/ha0
```

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Live | DSML Advanced : Pr

Probability2.ipynb - Colabora

numpy.random.randint — Num

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=YenSPTLCZ8un

Update

+ Code + Text

RAM Disk



```
import pandas as pd  
import numpy as np  
import matplotlib.pyplot as plt
```

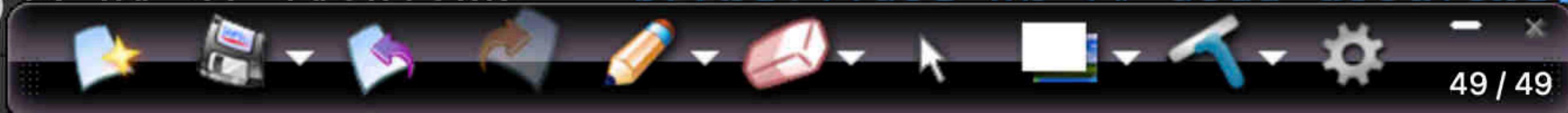
```
[ ] id = "1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe"  
print("https://drive.google.com/uc?export=download&id=" + id)
```

https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe

```
[ ] !wget "https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJ
```

```
--2022-04-21 14:01:07-- https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZ  
Resolving drive.google.com (drive.google.com)... 74.125.142.138, 74.125.142.102, 74.125  
Connecting to drive.google.com (drive.google.com)|74.125.142.138|:443... connected.  
HTTP request sent, awaiting response... 303 See Other  
Location: https://doc-0k-14-docs.googleusercontent.com/docs/securesc/ha0ro937gcuc717def  
Warning: wildcards not supported in HTTP.
```

```
--2022-04-21 14:01:09-- https://doc-0k-14-docs.googleusercontent.com/docs/securesc/ha0
```



Live | DSML Advanced : Pr

Probability2.ipynb - Colabora

numpy.random.randint — Num

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=YenSPTLCZ8un

Update

RAM
Disk

+ Code + Text

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

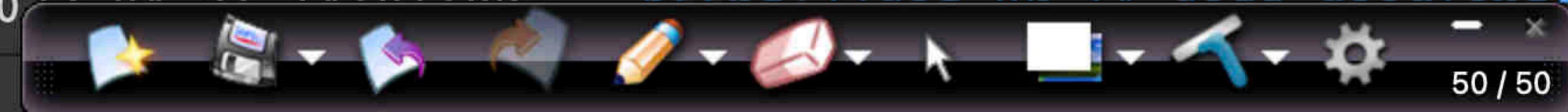
```
[ ] id = "1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe"
print("https://drive.google.com/uc?export=download&id=" + id)
```

https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe

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```

```
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Connecting to drive.google.com (drive.google.com)|74.125.142.138|:443... connected.
HTTP request sent, awaiting response... 303 See Other
Location: https://doc-0k-14-docs.googleusercontent.com/docs/securesc/ha0ro937gcuc717def
Warning: wildcards not supported in HTTP.
```

```
--2022-04-21 14:01:09-- https://doc-0k-14-docs.googleusercontent.com/docs/securesc/ha0
```



Live | DSML Advanced : Pr

Probability2.ipynb - Colabora

numpy.random.randint — Num

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=DxigbGYPbSxk

Update

+ Code + Text

✓ RAM Disk

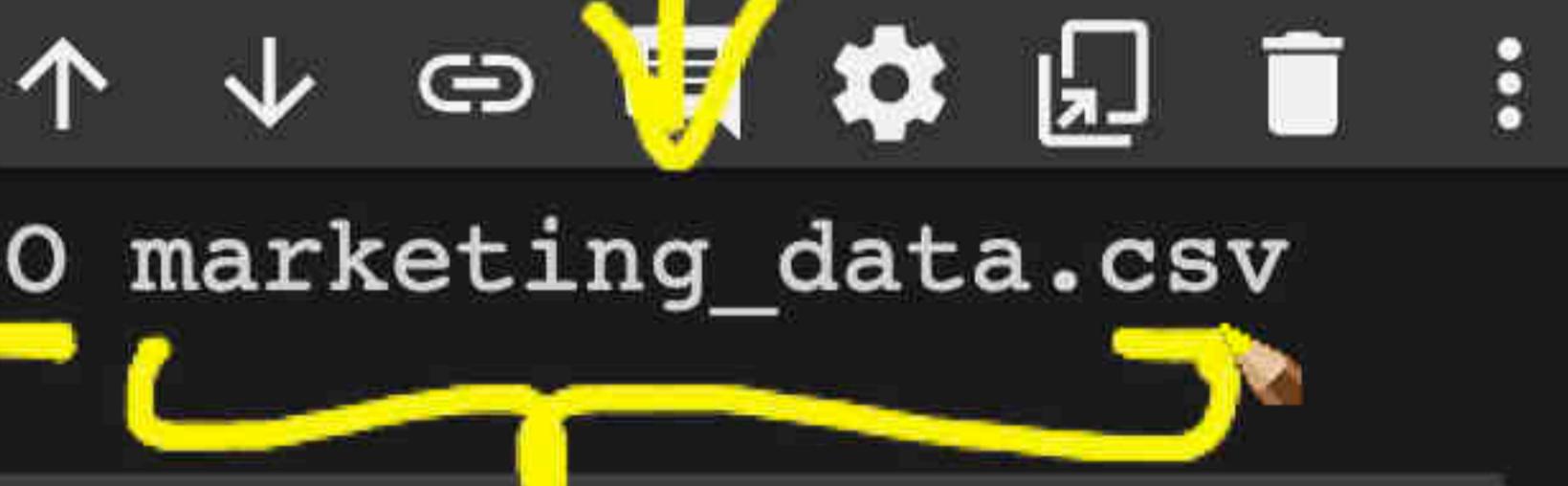


retail

```
[ ] import pandas as pd  
import numpy as np  
import matplotlib.pyplot as plt
```

```
[ ] id = "1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe"  
print("https://drive.google.com/uc?export=download&id=" + id)
```

https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZDU2LWxiugRwwK8PvJe



```
--2022-04-21 14:01:07-- https://drive.google.com/uc?export=download&id=1_8Tx-yFlcA_4PZ  
Resolving drive.google.com (drive.google.com)... 74.125.142.138, 74.125.142.102, 74.125  
Connecting to drive.google.com (drive.google.com)|74.125.142.138|:443... connected.  
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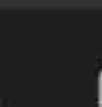
Live | DSML Advanced : Pr

Probability2.ipynb - Colabora

numpy.random.randint — Num



colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=SGqzqcJJbVA9



Update



+ Code + Text

✓ RAM
Disk[3]
1s

2022-04-21 17:22:15 (122 MB/s) - 'marketing_data.csv' saved [227054/227054]

{x}

0s



```
df = pd.read_csv('./marketing_data.csv')
df.info()
```



<class 'pandas.core.frame.DataFrame'>

RangeIndex: 2240 entries, 0 to 2239

Data columns (total 28 columns):

#	Column	Non-Null Count	Dtype
0	ID	2240 non-null	int64
1	Year_Birth	2240 non-null	int64
2	Education	2240 non-null	object
3	Marital_Status	2240 non-null	object
4	Income	2216 non-null	object
5	Kidhome	2240 non-null	int64
6	Teenhome	2240 non-null	int64
7	Dt_Customer	2240 non-null	object
8	RowNumber	2240 non-null	int64



Live | DSML Advanced : Pr x Probability2.ipynb - Colaboratory x numpy.random.randint — Num x +

← → C

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=SGqzqcJJbVA9

Update :



+ Code + Text



0s

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5	Kidhome	2240 non-null	int64
6	Teenhome	2240 non-null	int64
7	Dt_Customer	2240 non-null	object
8	Recency	2240 non-null	int64
9	MntWines	2240 non-null	int64
10	MntFruits	2240 non-null	int64
11	MntMeatProducts	2240 non-null	int64
12	MntFishProducts	2240 non-null	int64
13	MntSweetProducts	2240 non-null	int64

14



Live | DSML Advanced : Pr x Probability2.ipynb - Colaboratory x numpy.random.randint — Num x +

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=SGqzqcJJbVA9

Update

+ Code + Text

0s

0 ID 2240 non-null int64

1 Year_Birth 2240 non-null int64

2 Education 2240 non-null object

3 Marital_Status 2240 non-null object

4 Income 2216 non-null object

5 Kidhome 2240 non-null int64

6 Teenhome 2240 non-null int64

7 Dt_Customer 2240 non-null object

8 Recency 2240 non-null int64

9 MntWines 2240 non-null int64

10 MntFruits 2240 non-null int64

11 MntMeatProducts 2240 non-null int64

12 MntFishProducts 2240 non-null int64

13 MntSweetProducts 2240 non-null int64

14 MntGoldProds 2240 non-null int64

15 NumDealsPurchases 2240 non-null int64

16 NumWebPurchases 2240 non-null int64

17 NumCatalogPurchases 2240 non-null int64

18 NumStorePurchases 2240 non-null int64

19 NumWebVisitsMonth 2240 non-null int64

20 AcceptedCmp3 2240 non-null int64

21 AcceptedCmp4 2240 non-null int64

RAM Disk

Up Down Reload Comment Settings Copy Delete More

0s

0 ID 2240 non-null int64

1 Year_Birth 2240 non-null int64

2 Education 2240 non-null object

3 Marital_Status 2240 non-null object

4 Income 2216 non-null object

5 Kidhome 2240 non-null int64

6 Teenhome 2240 non-null int64

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+ Code + Text

0s

0 ID 2240 non-null int64

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RAM Disk

Up Down Reload Comment Settings Copy Delete More

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9 MntWines 2240 non-null int64

10 MntFruits 2240 non-null int64

11 MntMeatProducts 2240 non-null int64

12 MntFishProducts 2240 non-null int64

13 MntSweetProducts 2240 non-null int64

14 MntGoldProds 2240 non-null int64

15 NumDealsPurchases 2240 non-null int64

16 NumWebPurchases 2240 non-null int64

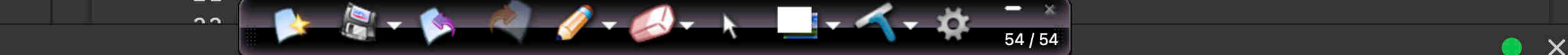
17 NumCatalogPurchases 2240 non-null int64

18 NumStorePurchases 2240 non-null int64

19 NumWebVisitsMonth 2240 non-null int64

20 AcceptedCmp3 2240 non-null int64

21 AcceptedCmp4 2240 non-null int64



5 rows × 28 columns

The image shows a dark-themed user interface. On the left, there is a white text input field containing the text '{x}'. To its right is a circular icon with a dark blue gradient background, featuring a white pencil with a yellow eraser and two small white stars. Further to the right is a pink ribbon icon with a crown on top, and below it is a pink ribbon icon.

A screenshot of a dark-themed file manager or browser interface. The top bar is white with a dark grey progress bar. Below it is a dark grey toolbar containing several white icons: a folder, a search bar, a refresh arrow, a link, a message bubble, a gear (settings), a square with an arrow, a trash can, and a vertical ellipsis. To the left of the toolbar, there's a dark sidebar with a folder icon.

```
df.shape
```

```
[ ] df['MntFruits'].mean()
```

This image shows a dark-themed desktop environment. A dock at the bottom contains icons for a file browser, terminal, file manager, and other applications. A window titled 'Untitled -' is open, showing a dark interface with a gear icon and a close button. The overall aesthetic is minimalist and modern.

Live | DSML Advanced : Pro X Probability2.ipynb - Colaboratory X numpy.random.randint — Num X +

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DSML Advanced : Probability and Statistics - 2 | Lecture

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Stop Sharing

Srikanth Varma Chekuri (You) (Screen)

01:54:58

56 / 56

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

Deepit To: Me 10:52 pm

'./' is necessary ?

10:52 pm

10:55 pm

Start Doubt Session

To: Everyone Enable/Disable Chat

Type message

56 / 56

People 56

Chat

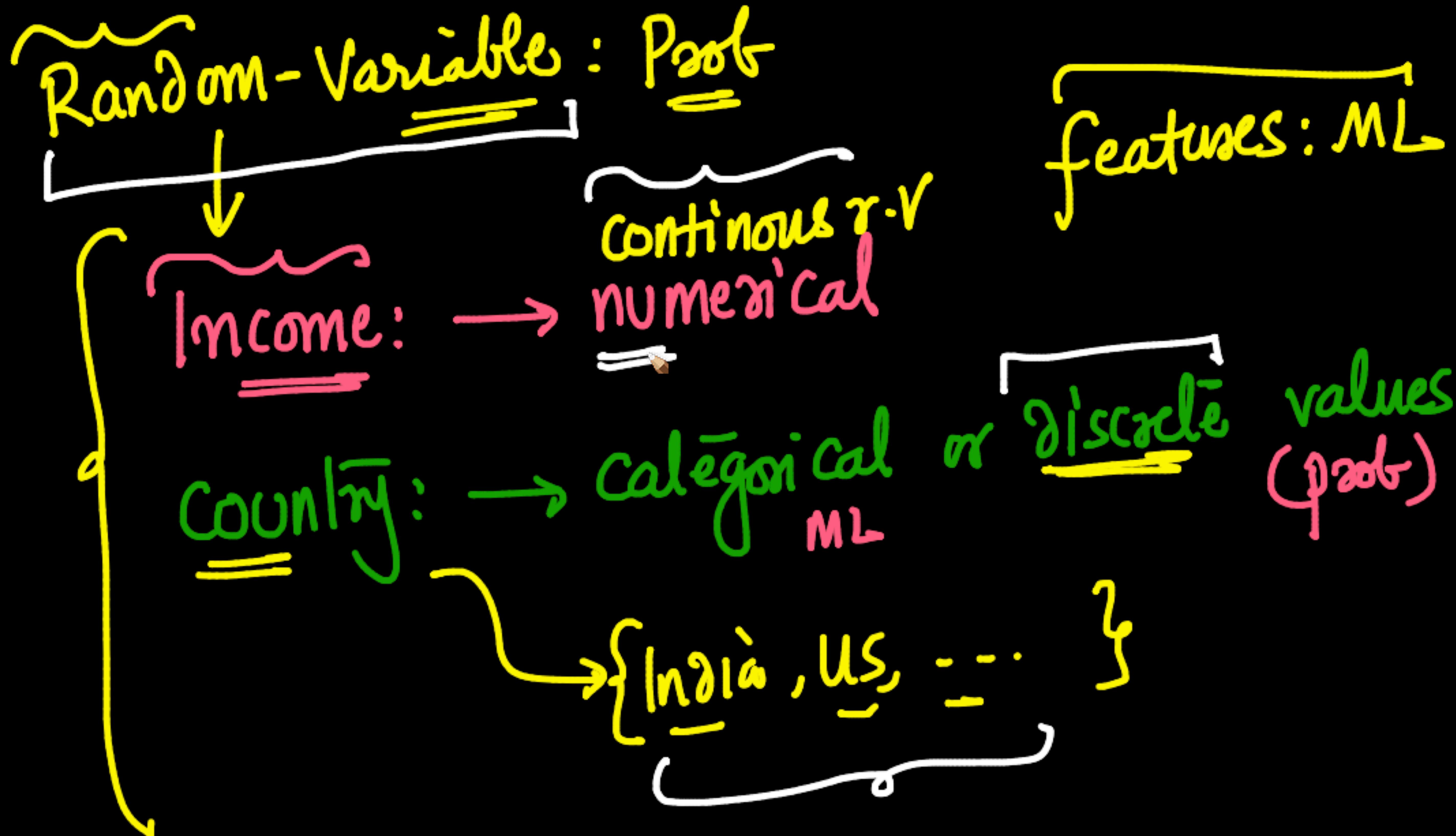
Questions 4

GEOMRTT Yes No

Start Doubt Session

Enable/Disable Chat

Type message



Dice:

\textcircled{D}

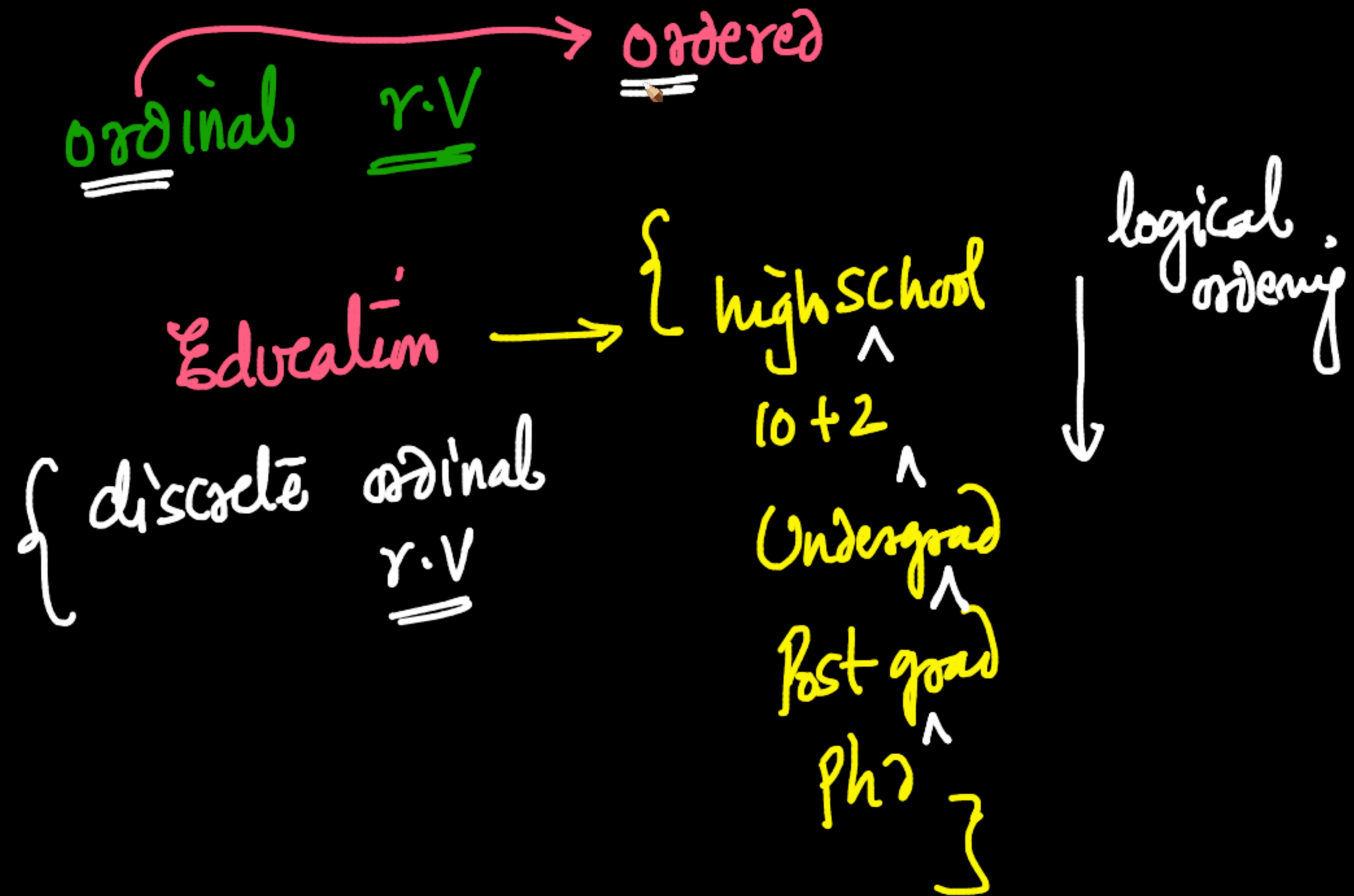
1, 2, 3, 4, 5, 6

discrete r.v

coin

$$\textcircled{C} = \begin{cases} 0 & \text{if H} \\ 1 & \text{if T} \end{cases}$$

discrete r.v



Live | DSML Advanced : Pro X Probability2.ipynb - Colaboratory X numpy.random.randint — Num X +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

DSML Advanced : Probability and Statistics - 2 | Lecture

Continuous r.v.
↓
numerical

You are sharing your screen now

Stop Sharing

GEOMRTT

Srikanth Varma Chekuri (You) (Screen)

02:02:30

53 People

Chat 4 Questions

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message + 10:55 pm

7

Amit Dube To: Everyone 10:58 pm

continuous values

Harpreet Singh To: Me 10:58 pm

Random variable means variable can take any value?

Start Doubt Session

Yes No

To: Everyone Enable/Disable Chat

Type message

60 / 60

Live | DSML Advanced : Pro X Probability2.ipynb - Colaboratory X numpy.random.randint — Num X +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

DSML Advanced : Probability and Statistics - 2 | Lecture

Income mean (Income)

You are sharing your screen now

Stop Sharing

Srikanth Varma Chekuri (You) (Screen)

02:03:39

GEOMRTT

10:55 pm

Amit Dube To: Everyone 10:58 pm

continuous values

Harpreet Singh To: Me 10:58 pm

Random variable means variable can take any value?

11:02 pm

3 New Messages 1

Start Doubt Session

To: Everyone Enable/Disable Chat

Type message

54 People

Chat

Questions 4

1

Yes No

61 / 61

Live | DSML Advanced : Pro X Probability2.ipynb - Colaboratory X numpy.random.randint — Num X +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

DSML Advanced : Probability and Statistics - 2 | Lecture

ordinal → categorical
discrete /
numerical / continuous

You are sharing your screen now

Stop Sharing

GEOMRTT

Srikanth Varma Chekuri (You) (Screen)

02:04:34

54 People

Chat

Questions 4

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

For numerical I was saying it can be said to be continuous

Avijit Swain To: Everyone 11:03 pm

So ordinal is also kind of categorical, additionally also ordered?

Deepit To: Me 11:03 pm

can you give a definition for RV

1 New Message

Start Doubt Session

To: Everyone Enable/Disable Chat

Type message

Yes No

62 / 62



WIKIPEDIA
The Free Encyclopedia

Main page
Contents
Current events
Random article
About Wikipedia
Contact us
Donate

Contribute
Help
Learn to edit
Community portal
Recent changes
Upload file

Tools

What links here

Article

Talk

Read

Edit

View history

Search Wikipedia

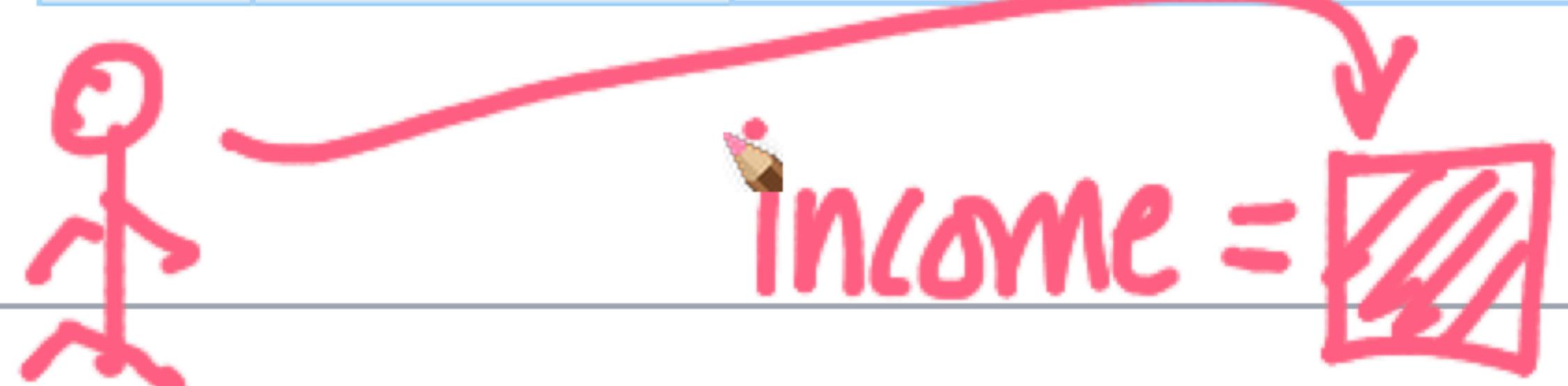


Random variable

From Wikipedia, the free encyclopedia

A **random variable** (also called **random quantity**, **aleatory variable**, or **stochastic variable**) is a mathematical formalization of a quantity or object which depends on random events.^[1]

Informally, randomness typically represents some fundamental element of chance, such as in the roll of a dice; it may also represent uncertainty, such as measurement error.^[1] However, the interpretation of probability is philosophically complicated, and even in specific cases is not always straightforward. The purely mathematical analysis of random variables is independent of such interpretational difficulties, and can be based upon a rigorous axiomatic setup.



Part of a series on [statistics](#)
Probability theory



[Probability \(Axioms\)](#) · [Determinism \(System\)](#) ·
[Indeterminism](#) · [Randomness](#)
[Probability space](#) · [Sample space](#) · [Event](#)
([Collectively exhaustive events](#) ·
[Elementary event](#) · [Mutual exclusivity](#) ·
[Outcome](#) · [Singleton](#)) · [Experiment](#)
([Bernoulli trial](#)) · [Probability distribution](#)
[Bernoulli distribution](#) · [Binomial distribution](#) ·
([Normal distribution](#)) · [Probability measure](#) ·
[Random variable \(Bernoulli process\)](#) ·

Live | DSML Advanced : Pro X Probability2.ipynb - Colaboratory X Random variable - Wikipedia X +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

DSML Advanced : Probability and Statistics - 2 | Lecture

00

R.V: Income

$P(\text{Income} > 100,000\$) = \boxed{\quad}$

You are sharing your screen now

Stop Sharing

$P(D=1) = \frac{1}{6}$

Srikanth Varma Chekuri (You) (Screen)

02:06:57

52 People

Chat 4 Questions

Shankar Kantharaj To: Everyone 11:03 pm it has a probability of taking on a value right?

Harpreet Singh To: Everyone 11:04 pm Thanks got it now.

11:06 pm

GEOMRTT Yes No

To: Everyone Enable/Disable Chat

Type message

Start Doubt Session

Lightbulb icon

Red button with white icon

Live | DSML Advanced : Pro ● x Probability2.ipynb - Colaboratory ● x Random variable - Wikipedia ● x +

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DSML Advanced : Probability and Statistics - 2 | Lecture

GEOMRTT

Discipline Stats

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Srikanth Varma Chekuri (You) (Screen)

02:08:02

00

50 People

Chat 4 Questions

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Thanks got it now.

Pin a message + 11:07 pm

2

Anshu Priyadarshini To: Everyone 11:07 pm

picking a person is random sampling and attribute such as "income" is random variable?

Yes No

To: Everyone Enable/Disable Chat

Type message

Start Doubt Session

50 People

Chat 4 Questions

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Thanks got it now.

Pin a message + 11:07 pm

2

Anshu Priyadarshini To: Everyone 11:07 pm

picking a person is random sampling and attribute such as "income" is random variable?

Yes No

To: Everyone Enable/Disable Chat

Type message

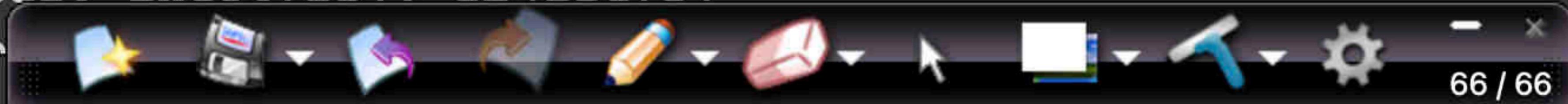
Start Doubt Session

+ Code + Text

6	'Teenname	2240	non-null	int64
7	Dt_Customer	2240	non-null	object
8	Recency	2240	non-null	int64
9	MntWines	2240	non-null	int64
10	MntFruits	2240	non-null	int64
11	MntMeatProducts	2240	non-null	int64
12	MntFishProducts	2240	non-null	int64
13	MntSweetProducts	2240	non-null	int64
14	MntGoldProds	2240	non-null	int64
15	NumDealsPurchases	2240	non-null	int64
16	NumWebPurchases	2240	non-null	int64
17	NumCatalogPurchases	2240	non-null	int64
18	NumStorePurchases	2240	non-null	int64
19	NumWebVisitsMonth	2240	non-null	int64
20	AcceptedCmp3	2240	non-null	int64
21	AcceptedCmp4	2240	non-null	int64
22	AcceptedCmp5	2240	non-null	int64
23	AcceptedCmp1	2240	non-null	int64
24	AcceptedCmp2	2240	non-null	int64
25	Response	2240	non-null	int64
26	Complain	2240	non-null	int64
27	Country	2240	non-null	object

dtypes: int64(23), object(5)

memo



ON WHICH CATEGMY
DO CUST SPEND
MORE MONEY M?

+ Code + Text

✓ RAM
Disk



<class 'pandas.core.frame.DataFrame'>

RangeIndex: 2240 entries, 0 to 2239

Data columns (total 28 columns):

#	Column	Non-Null Count	Dtype
0	ID	2240 non-null	int64
1	Year_Birth	2240 non-null	int64
2	Education	2240 non-null	object
3	Marital_Status	2240 non-null	object
4	Income	2216 non-null	object
5	Kidhome	2240 non-null	int64
6	Teenhome	2240 non-null	int64
7	Dt_Customer	2240 non-null	object
8	Recency	2240 non-null	int64
9	MntWines	2240 non-null	int64
10	MntFruits	2240 non-null	int64
11	MntMeatProducts	2240 non-null	int64
12	MntFishProducts	2240 non-null	int64
13	MntSweetProducts	2240 non-null	int64
14	MntGoldProds	2240 non-null	int64
15	NumDealsPurchases	2240 non-null	int64

mean
avg spent on
each category

Live | DSML Advanced : Pr

Probability2.ipynb - Colabora

Random variable - Wikipedia

[←](#)[→](#)[C](#)

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=SGqzqcJJbVA9



Update

⋮

+ Code + Text

✓ RAM
Disk

⋮



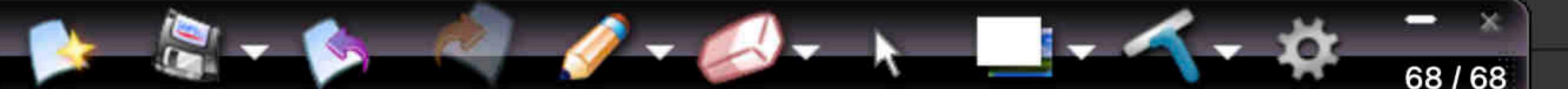
<class 'pandas.core.frame.DataFrame'>

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9	MntWines	2240 non-null	int64
10	MntFruits	2240 non-null	int64
11	MntMeatProducts	2240 non-null	int64
12	MntFishProducts	2240 non-null	int64
13	MntSweetProducts	2240 non-null	int64
14	MntGoldProds	2240 non-null	int64
15	NumDealsPurchases	2240 non-null	int64

16

wine!

$$\underline{x_1 + x_2 + x_3 + \dots + x_n}$$

n

Live | DSML Advanced : Pr × Probability2.ipynb - Colaboratory × Random variable - Wikipedia × +



colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=NotE6ZhBewuj

Update

RAM
Disk

```
[ ] print("Gold:", df['MntGoldProds'].max(), df['MntGoldProds'].min())
print("Fruits:", df['MntFruits'].max(), df['MntFruits'].min())
print("Sweets:", df['MntSweetProducts'].max(), df['MntSweetProducts'].min())
print("Wine:", df['MntWines'].max(), df['MntWines'].min())
print("Meat:", df['MntMeatProducts'].max(), df['MntMeatProducts'].min())
print("Fish:", df['MntFishProducts'].max(), df['MntFishProducts'].min())
```

Gold: 362 0

Fruits: 199 0

Sweets: 263 0

Wine: 1493 0

Meat: 1725 0

Fish: 259 0

MAX → 1725 & one family

```
[ ] print("Gold:", df['MntGoldProds'].mean(), df['MntGoldProds'].median())
print("Fruits:", df['MntFruits'].mean(), df['MntFruits'].median())
print("Sweets:", df['MntSweetProducts'].mean(), df['MntSweetProducts'].median())
print("Wine:", df['MntWines'].mean(), df['MntWines'].median())
print("Meat:", df['MntMeatProducts'].mean(), df['MntMeatProducts'].median())
print("Fish:", df['MntFishProducts'].mean(), df['MntFishProducts'].median())
```



Live | DSML Advanced : Pr × Probability2.ipynb - Colaboratory × Random variable - Wikipedia × +

← → C

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=NotE6ZhBewuj

Update :

+ Code + Text

✓ RAM Disk

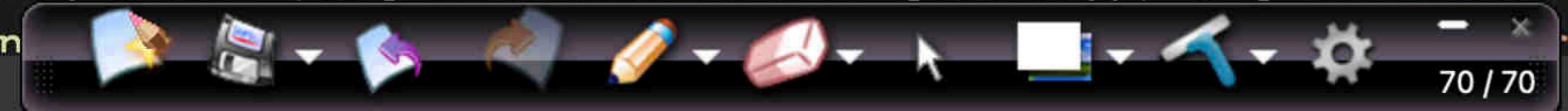


↑ ↓ ↻ ☰ ⚙️ 🗑️ ⏺

```
[ ] print("Gold:",df['MntGoldProds'].max(), df['MntGoldProds'].min())
print("Fruits:",df['MntFruits'].max(), df['MntFruits'].min())
print("Sweets:",df['MntSweetProducts'].max(), df['MntSweetProducts'].min())
print("Wine:",df['MntWines'].max(), df['MntWines'].min())
print("Meat:",df['MntMeatProducts'].max(), df['MntMeatProducts'].min())
print("Fish:",df['MntFishProducts'].max(), df['MntFishProducts'].min())
```

Gold: 362 0
Fruits: 199 0
Sweets: 263 0
Wine: 1493 0
Meat: 1725 0
Fish: 259 0

```
[ ] print("Gold:",df['MntGoldProds'].mean(), df['MntGoldProds'].median())
print("Fruits:",df['MntFruits'].mean(), df['MntFruits'].median())
print("Sweets:",df['MntSweetProducts'].mean(), df['MntSweetProducts'].median())
print("Wine:",df['MntWines'].mean(), df['MntWines'].median())
print("Meat:",df['MntMeatProducts'].mean(), df['MntMeatProducts'].median())
print("Fish:",df['MntFishProducts'].mean(), df['MntFishProducts'].median())
```



heavily impacted
by few outliers

mean: problem

10, 11, 9, 8, 12 → mean = 10

10, 11, 9, 8, 12, [~]1000 → mean =

$$\frac{1050}{5}$$

extreme outliers → lots of detail



{ Mean → impacted by outliers

algebraic
$$\frac{x_1 + x_2 + \dots + x_n}{n}$$

median

→ 10, 9, 11, 12, 8, 1000

→ sort: 8, 9, 10, 11, 12, 1000 ↴ = even

→ middle:

10.5
median ✓

$n=8$:

1 2 3 ↓ 4 5
8, 9, 10, 11, 1000

median = 10

Median \rightarrow "average" or central-value

↳ robust estimation

↓
not much impacted by outliers

Live | DSML Advanced : Pr

Probability2.ipynb - Colabora

Random variable - Wikipedia

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=4eOucmK9eoIO

Update

+ Code + Text

Wine: 1475 0
Meat: 1725 0
Fish: 259 0

[] print("Gold:", df['MntGoldProducts'].mean(), df['MntGoldProducts'].median())
print("Fruits:", df['MntFruits'].mean(), df['MntFruits'].median())
print("Sweets:", df['MntSweetProducts'].mean(), df['MntSweetProducts'].median())
print("Wine:", df['MntWines'].mean(), df['MntWines'].median())
print("Meat:", df['MntMeatProducts'].mean(), df['MntMeatProducts'].median())
print("Fish:", df['MntFishProducts'].mean(), df['MntFishProducts'].median())

Gold: 44.021875 24.0
Fruits: 26.302232142857143 8.0
Sweets: 27.06294642857143 8.0
Wine: 303.9357142857143 173.5
Meat: 166.95 67.0
Fish: 37.52544642857143 12.0

[] #mode
df["Education"].value_counts()

✓ RAM
Disk

Live | DSML Advanced : Pr

Probability2.ipynb - Colabora

Random variable - Wikipedia

colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=4eOucmK9eoIO

Update

+ Code + Text

Wine: 1475 0
Meat: 1725 0
Fish: 259 0

```
[ ] print("Gold:",df['MntGoldProducts'].mean(), df['MntGoldProducts'].median())  
print("Fruits:",df['MntFruits'].mean(), df['MntFruits'].median())  
print("Sweets:",df['MntSweetProducts'].mean(), df['MntSweetProducts'].median())  
print("Wine:",df['MntWines'].mean(), df['MntWines'].median())  
print("Meat:",df['MntMeatProducts'].mean(), df['MntMeatProducts'].median())  
print("Fish:",df['MntFishProducts'].mean(), df['MntFishProducts'].median())
```

Gold: 44.021875 24.0
Fruits: 26.302232142857143 8.0
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Wine: 303.9357142857143 173.5
Meat: 166.95 67.0
Fish: 37.52544642857143 12.0

```
[ ] #mode  
df["Education"].value_counts()
```

✓ RAM
Disk

Live | DSML Advanced : Pr

Probability2.ipynb - Colabora

Random variable - Wikipedia

[←](#) [→](#) [C](#)colab.research.google.com/drive/1I5T7TVIAASw9Tdl4JxqJxuDqRgFBGOW3#scrollTo=4eOucmK9eoIO[Update](#) [⋮](#)[+ Code](#) [+ Text](#) [WINE: 1475 0
Meat: 1725 0
Fish: 259 0](#)

{x}

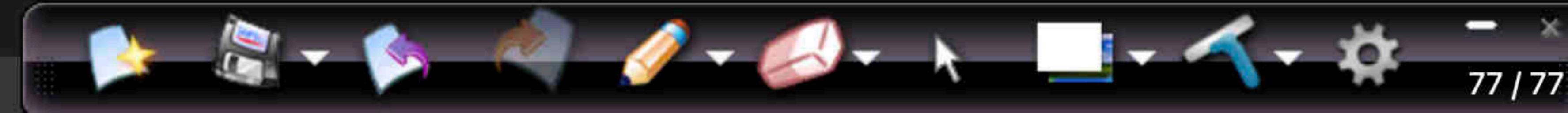
```
[ ] print("Gold:",df[ 'MntGoldProducts' ].mean(), df[ 'MntGoldProducts' ].median())  
print("Fruits:",df[ 'MntFruits' ].mean(), df[ 'MntFruits' ].median())  
print("Sweets:",df[ 'MntSweetProducts' ].mean(), df[ 'MntSweetProducts' ].median())  
print("Wine:",df[ 'MntWines' ].mean(), df[ 'MntWines' ].median())  
print("Meat:",df[ 'MntMeatProducts' ].mean(), df[ 'MntMeatProducts' ].median())  
print("Fish:",df[ 'MntFishProducts' ].mean(), df[ 'MntFishProducts' ].median())
```

{ Gold: 44.021875 24.0
Fruits: 26.302232142857143 8.0
Sweets: 27.06294642857143 8.0
Wine: 303.9357142857143 173.5
Meat: 166.95 67.0
Fish: 37.52544642857143 12.0

<>

≡

```
[ ] #mode  
df[ "Education" ].value_counts()
```



Live | DSML Advanced : Pro X Probability2.ipynb - Colaboratory X Random variable - Wikipedia X +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

DSML Advanced : Probability and Statistics - 2 | Lecture

2,3,4,6, 100, 102, 106, 108, 110

median

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Srikanth Varma Chekuri (You) (Screen)

02:29:44

OK 00

People 47

Chat

Questions 3

Notify me about Nothing

mean is measure of central tendency.

Pin a message +

Narendra Sharma To: Everyone 11:24 pm
I mean to say if the difference in values is uneven median can be on 1 side

Avijit Swain To: Everyone 11:25 pm
If mean > median, then the values on the right of the median are very distant from median than the ones to the left

5 New Messages

GEOMRTT
Yes No

To: Everyone Enable/Disable Chat

Type message

Start Doubt Session

GEOMRTT
Yes No

Live | DSML Advanced : Pro X Probability2.ipynb - Colaboratory X Random variable - Wikipedia X +

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median

mean-impacted by outliers

Incomes

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GEOMRTT

Srikanth Varma Chekuri (You) (Screen)

02:32:34

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 / 79

00 Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

Avijit Swain To: Everyone 11:26 pm

The extreme larger values to the right of the median is pushing the mean to be higher.

11:26 pm

11:28 pm

3 New Messages

Start Doubt Session

To: Everyone Enable/Disable Chat

Type message

People 47

Chat 3

Questions

Start Doubt Session

Yes No

Enable/Disable Chat

Type message

Update

Live | DSML Advanced : Pre X Probability2.ipynb - Colaboratory X Bayes' Theorem 101 — Example X +

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Srikanth Varma Chekuri (You) (Screen)

02:36:19

$P(+ve) = P(+ve \cap C) + P(+ve \cap NC)$

$P(+ve|C)P(C) + P(+ve|NC)P(NC)$

$0.9 \quad 0.01$

0.99

GEOMRTT

Srikanth Varma Chekuri (You)

Questions

Live (3) Answered (3)

For Doubt Session : Independent And Mutually Exclusive Events.

Asked 105 minutes ago

Swapnil Ganvir

doubt from previous lecture
we are saying $p(S|m_1) = p(S \text{ int } m_1)/p(m_1)$
but i feel it should be
 $p(S|m_1) = (S \text{ int } m_1)/m_1$

Already Answered Answer Now

Doubt Session Ongoing

Live | DSML Advanced : Pre X Probability2.ipynb - Colaboratory X Bayes' Theorem 101 — Example X +

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DSML Advanced : Probability and Statistics - 2 | Lecture

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$p(S|M_1) = \frac{p(S \cap M_1)}{p(M_1)}$

$\frac{|S \cap M_1|}{|M_1|} = \frac{95}{100}$

$|S \cap M_1| / 100$

$|M_1| / 100$

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

Shankar Kantharaj

i mean why is the equation $p(+ve \text{ and } C) + p(+ve \text{ and } NC)$ and why not $p(+ve|C) + p(+ve|NC)$?

Already Answered Answer Now

11:38 pm

GEOMRTT
Yes No

To: Everyone Enable/Disable Chat

Type message

People 27

Chat

Questions 4

Doubt Session Ongoing

02:39:50

81 / 82

Live | DSML Advanced : Pre X Probability2.ipynb - Colaboratory X Bayes' Theorem 101 — Example X +

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$\mu = 100$

mi loo s 100

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95

Srikanth Varma Chekuri (You)

Chat

Notify me about Nothing

Pin a message

Shankar Kantharaj

i mean why is the equation $p(+ve \text{ and } C) + p(+ve \text{ and } NC)$ and why not $p(+ve|C) + p(+ve|NC)$?

Already Answered Answer Now

11:38 pm 1

Doubt Session Ongoing GEOMRTT Yes No

To: Everyone Enable/Disable Chat

Type message

02:38:52

82 / 82

People 28

Chat 4

Questions

Scalera

Live | DSML Advanced : Pre X Probability2.ipynb - Colaboratory X Bayes' Theorem 101 — Example X +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

DSML Advanced : Probability and Statistics - 2 | Lecture

00

$\tilde{P}(\text{+ve}) = P(\text{+ve} \cap C) + P(\text{+ve} \cap NC)$

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$P(\text{+ve}|C) + P(\text{+ve}|NC) \times$

GEOMRTT

Srikanth Varma Chekuri (You) (Screen)

02:42:29

83 / 84

Srikanth Varma Chekuri (You)

Questions

Live (3) Answered (5)

Most upvoted

Note: Please click on "Answer Now" button before you start explaining the doubt to perfectly map it with the classroom video.

Shankar Kantharaj

i mean why is the equation $p(+ve \text{ and } C) + p(+ve \text{ and } NC)$ and why not $p(+ve|C) + p(+ve|NC)$?

Already Answered Answer Now

Asked 2 minutes ago 1

Avijit Swain

People 23 Chat Questions 3

Live | DSML Advanced : Pre X Probability2.ipynb - Colaboratory X Bayes' Theorem 101 — Example X +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

DSML Advanced : Probability and Statistics - 2 | Lecture

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$P(+ve) = P(+ve \cap C) + P(+ve \cap NC)$

Srikanth Varma Chekuri (You) (Screen)

02:42:54

U

C NG

Questions

Live (3) Answered (5)

Note: Please click on "Answer Now" button before you start explaining the doubt to perfectly map it with the classroom video.

Shankar Kantharaj

i mean why is the equation $p(+ve \text{ and } C) + p(+ve \text{ and } NC)$ and why not $p(+ve|C) + p(+ve|NC)$?

Already Answered Answer Now GEOMRTT

Asked 2 minutes ago 1

Avijit Swain

People 23

Chat

Questions 3

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Update :

DSML Advanced : Probability and Statistics - 2 | Lecture

mutually excl ~~not~~ indep

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Srikanth Varma Chekuri (You) (Screen)

02:44:45

85 / 85

Avijit Swain

People

Search

Srikanth Varma Chekuri (Host, You)

Avijit Swain Raised hand

AC Abhishek Chopra

Abhishek GC

Abhishek Singh

Ankit Anand

Biswaroop Banerjee

Chat

Questions 4

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DSML Advanced : Probability and Statistics - 2 | Lecture

mutually excl

$S \cap D = \emptyset$

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Stop Sharing

$p(S \cap D) = 0$

indep

$p(S|D) = p(S)$

$p(S \cap D) = \frac{p(S) \cdot p(D)}{p(D)}$

$S = \emptyset$

$p(D|S) = ?$

GEOMRTT

Avijit Swain

People

Search

Srikanth Varma Chekuri (Host, You)

Avijit Swain

Abhishek Chopra

Abhishek GC

Abhishek Singh

Ankit Anand

Biswaroop Banerjee

Doubt Session Ongoing

02:47:15

86 / 86

22 People

Chat

4 Questions

Scalera

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DSML Advanced : Probability and Statistics - 2 | Lecture

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$P(+ve|C)$

\downarrow

$P(+ve \cap C)$

$\frac{P(+ve \cap C)}{P(C)} = \frac{90}{100}$

C

$NC = 900$

$U = 1000$

perfectly map it with the classroom video.

Avijit Swain

Questions

Live (2) Answered (7)

vikas

in your example itself, set example, can you please explain what would be $P(+ve/C)$ or $P(+ve/NC)$

Already Answered Answer Now

Asked 5 minutes ago 0 GEOMRTT

vikas

$P(+ve) = P(+ve/C) + P(+ve/NC)$ also sounds right, can you please tell me how it is wrong... i know it is not correct, but

Srikanth Varma Chekuri (You) (Screen)

02:49:48

87 / 87

People 21

Chat

Questions 2

Doubt Session Ongoing

Live | DSML Advanced : Probab X | Probability2.ipynb - Colaborato X | Bayes' Theorem 101 — Example X | +

scaler.com/meetings/i/dsml-advanced-probability-and-statistics-2-2/live

Update :

You have left the meeting

We get frequent requests for your notes!

Notes written by you helps in understanding the topic better. You can upload the notes in two simple steps mentioned below

1

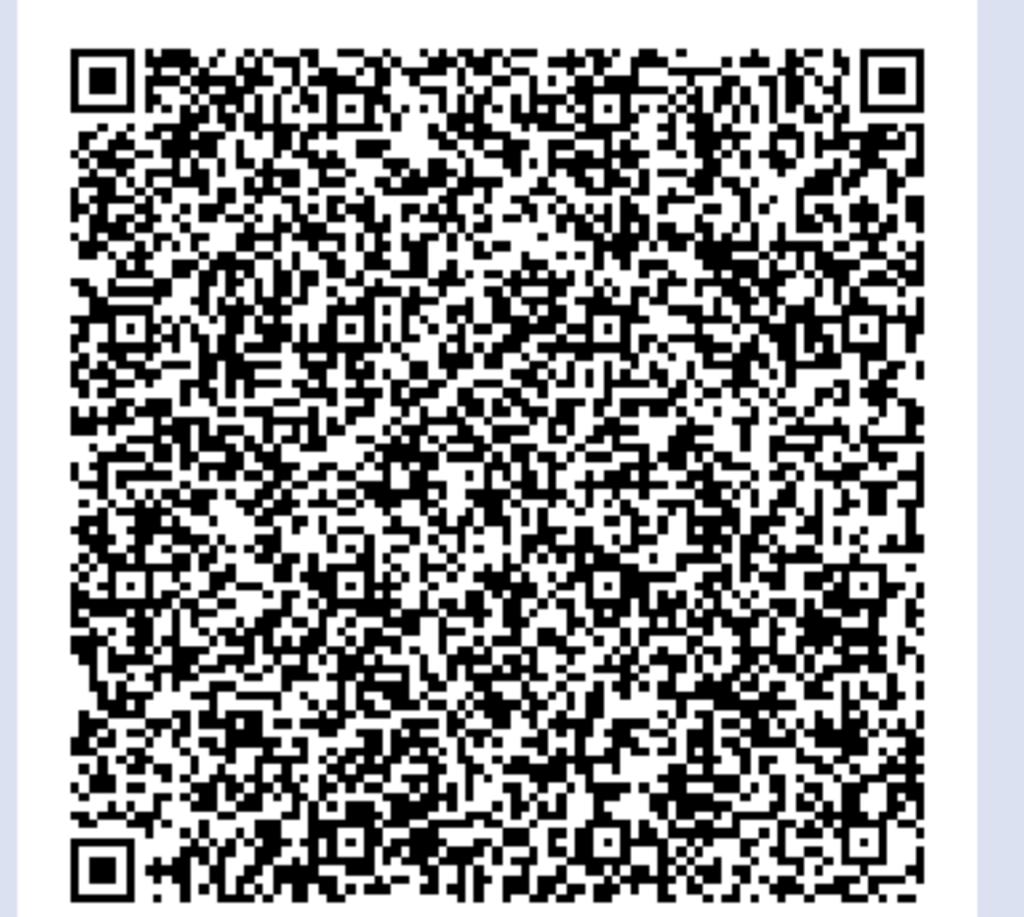
Scan the QR code with your iPad

Scanner should be present in the top menu on your iPad

2

Upload Notes on the generated link

All notes uploaded will be visible in the saved version of this session



OR

Drag and drop files or [click here to upload](#)

Files Uploaded from your computer appear here