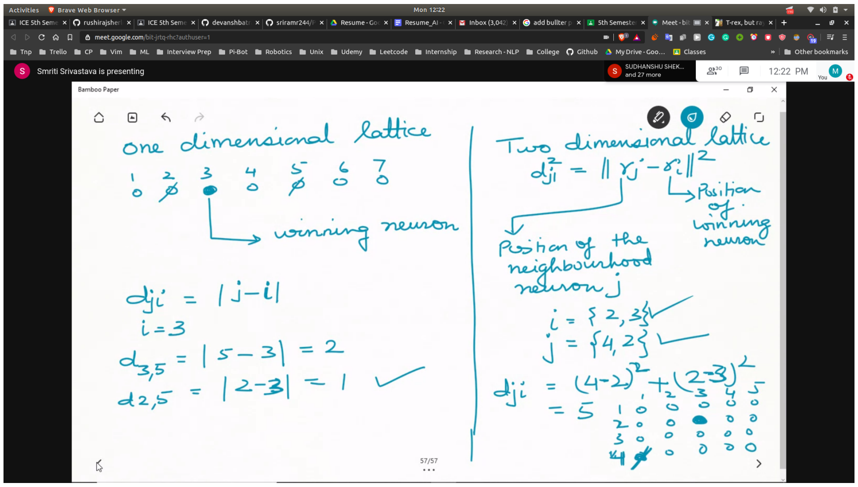
SOM

- 

Brave Web Browser
Mon 12:22
meet.google.com/bit-jrtq-rhc?authuser=1
Smriti Srivastava is presenting
SUDHANSHU SHEK... and 27 more
12:22 PM
Bamboo Paper
57/57

one dimensional lattice

1 2 3 4 5 6 7

winning neuron

$d_{ji} = |j-i|$

$i=3$

$d_{3,5} = |5-3| = 2$

$d_{2,5} = |2-3| = 1$ ✓

Two dimensional lattice

$d_{ji}^2 = \|r_j - r_i\|^2$

Position of winning neuron

Position of the neighbourhood neuron j

$i = \{2,3\}$ ✓

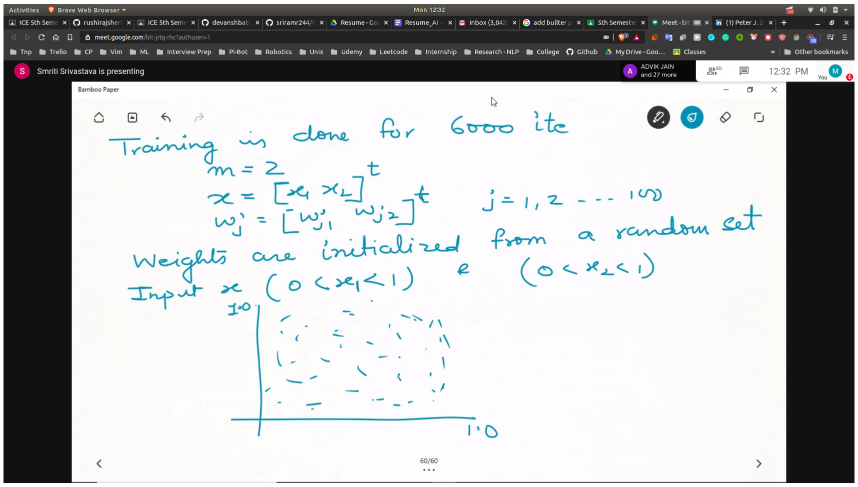
$j = \{4,2\}$ ✓

$d_{ji} = (4-2)^2 + (2-3)^2$

$= 5$

How 1-D SOM Learn 2-D Topology

- simulation
- 100 neurons chosen
- organised in 1-d lattice
- network is to be trained with a 2 dimensional input vector x ### Steps
- input data is coming randomly from a 2d topolgy
- x = [x1,c2] -> each data point is 2 dimension
- wi –> is also 2-dimensional
- Training
- for 6000 iteration
- m = 2
- x = [x1 x2]ˆT
- wj = [wj1 wj2]ˆT j=1,2 . . . 100
- wrights are initialized from random set

- 

Training is done for 6000 ite

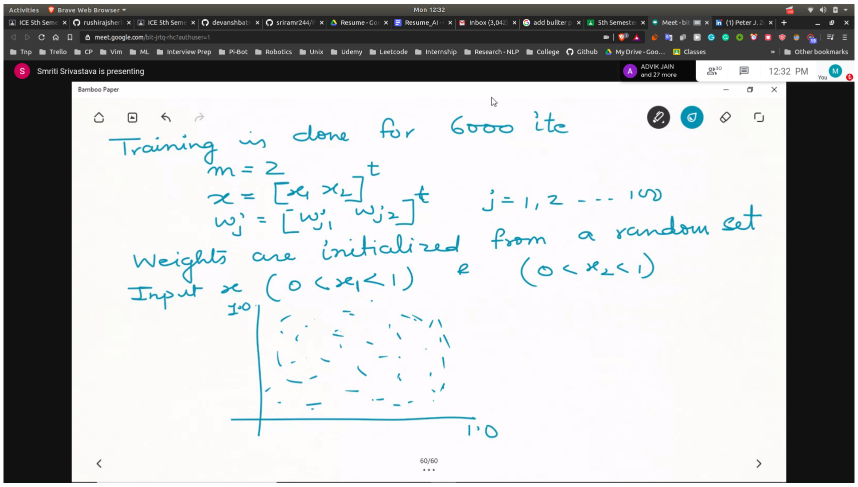
$m = 2$

$x = [x_1 \; x_2]^t \qquad j = 1, 2 \; ... \; 100$

$w_j' = [w_{j1}' \; w_{j2}]^t$

Weights are initialized from a random set

Input x $(0 < x_1 < 1)$ & $(0 < x_2 < 1)$

- 

Training is done for 6000 ite

$m = 2$

$x = [x_1 \; x_2]^t \qquad j = 1, 2 \; ... \; 100$

$w_j' = [w_{j1}' \; w_{j2}]^t$

Weights are initialized from a random set

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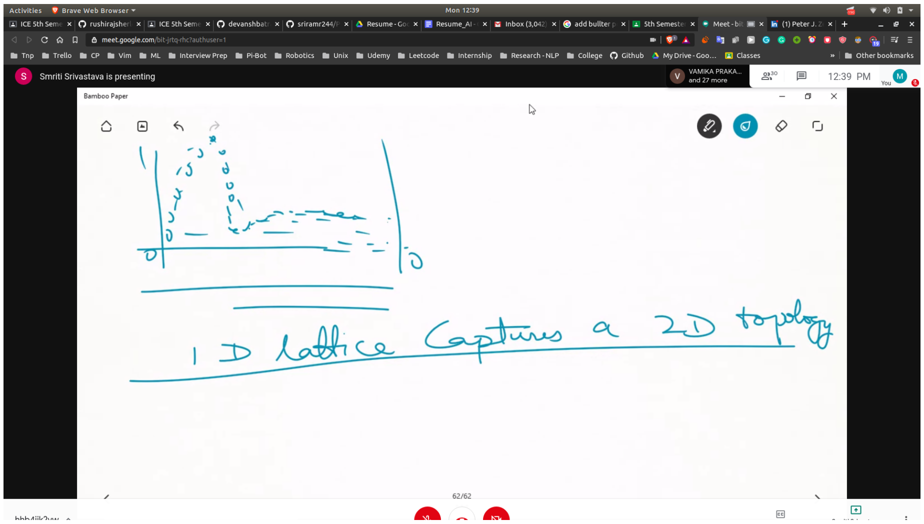

1 D lattice Captures a 2D topology

Figure 1: prc3