OneNote for Windows 10

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Shapes Ink to Shape Ink to Text

100 Days of ML

- Day 14 - Framing t...
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- Day 32 - Discrtizati...

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1. Encoding Numerical Features
2. Discretization
3. Types of Discretization
4. Equal Width/Uniform Binning
5. Equal Frequency/Quantile Binni...
6. KMeans Binning
7. Encoding the discretized variable
8. Example
9. Custom/Domain Based Binning
10. Binarization
11. Example

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# 1. Encoding Numerical Features

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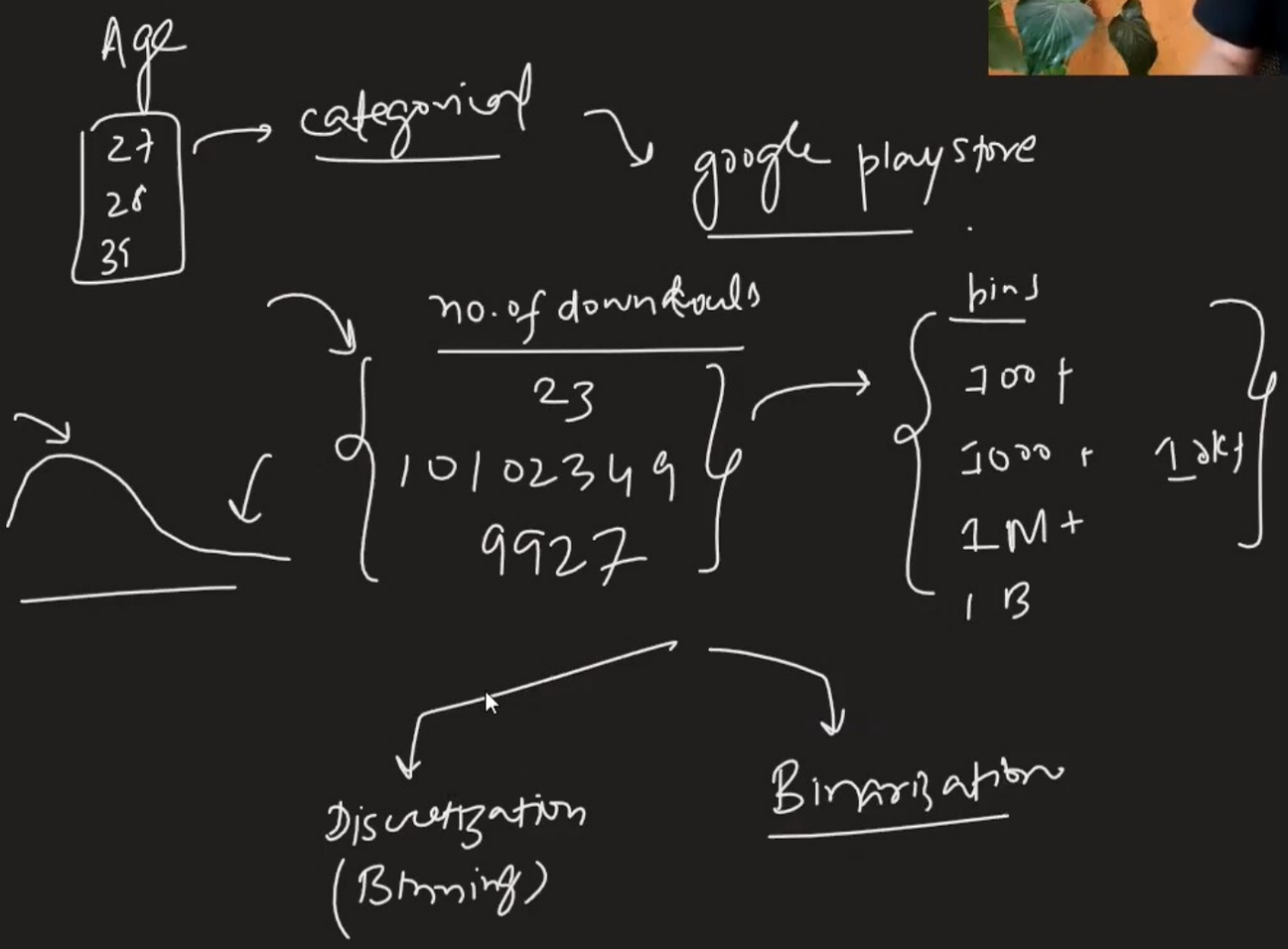


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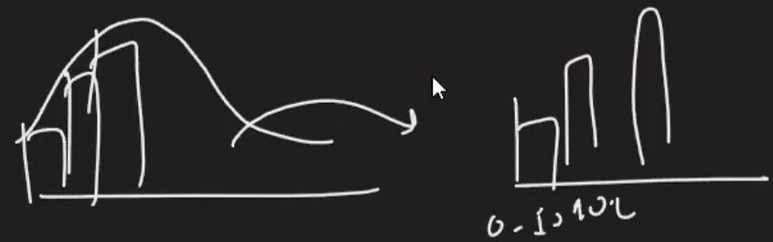
# 2. Discretization


Discretization is the process of transforming continuous variables into discrete variables by creating a set of contiguous intervals that span the range of the variable's values. Discretization is also called binning, where bin is an alternative name for interval.

Why use Discretization:

1. To handle Outliers
2. To improve the value spread



Age

23 42 , 57 81 . . . 100

↓

0-10, 10-20, 20-30 . . .

5 6 10

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# 3. Types of Discretization

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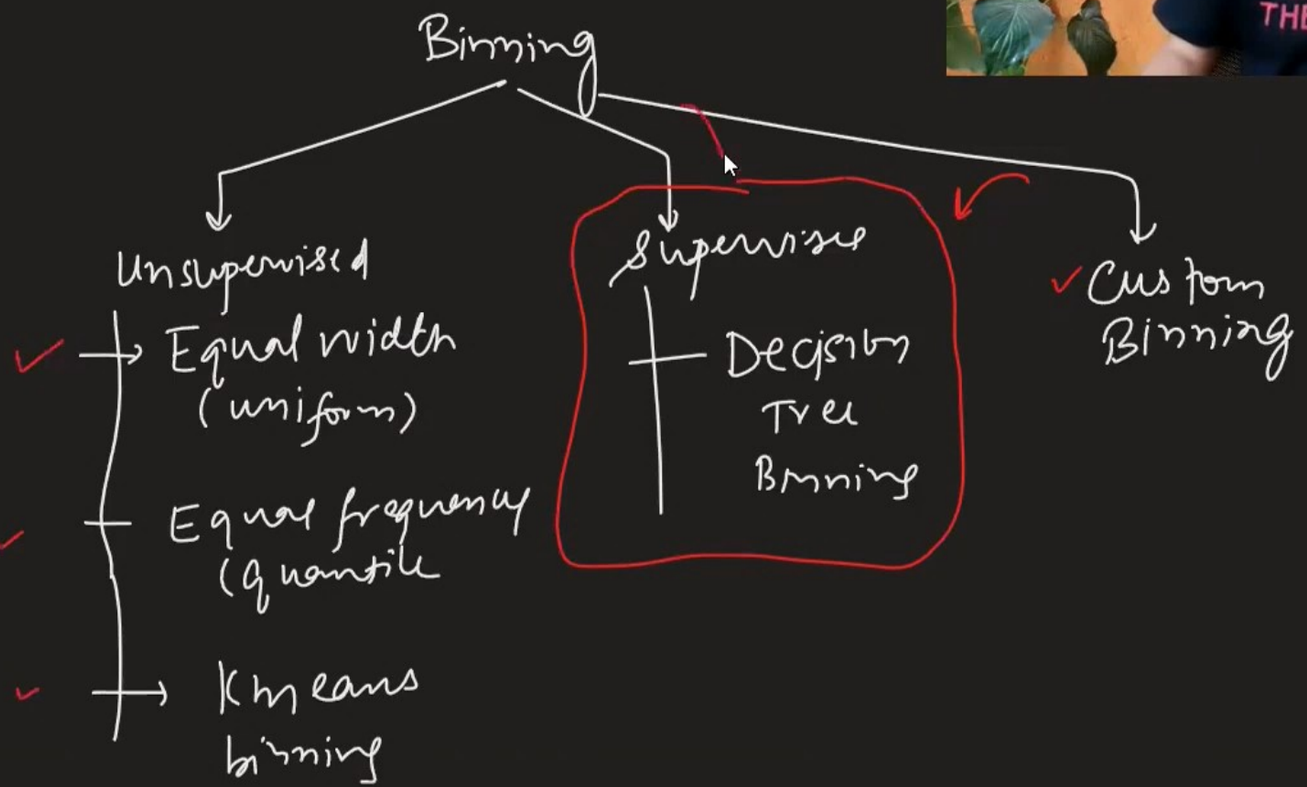


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# 4. Equal Width/Uniform Binning

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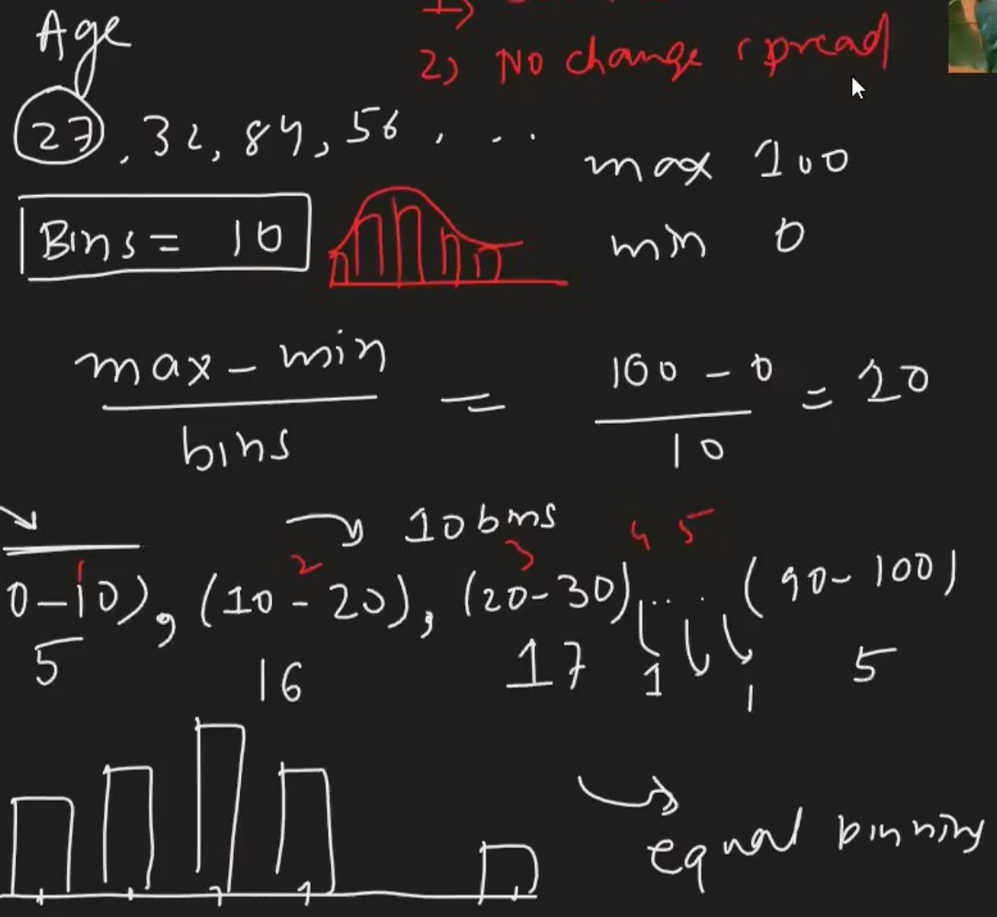


| | age | age_trf | age_labels |
|---|---|---|---|
| 314 | 43.0 | 5.0 | (40.21, 48.168] |
| 523 | 44.0 | 5.0 | (40.21, 48.168] |
| 352 | 15.0 | 1.0 | (8.378, 16.336] |
| 534 | 30.0 | 3.0 | (24.294, 32.252] |
| 211 | 35.0 | 4.0 | (32.252, 40.21] |
| 530 | 2.0 | 0.0 | (0.42, 8.378] |
| 786 | 18.0 | 2.0 | (16.336, 24.294] |
| 827 | 1.0 | 0.0 | (0.42, 8.378] |
| 372 | 19.0 | 2.0 | (16.336, 24.294] |
| 518 | 36.0 | 4.0 | (32.252, 40.21] |

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# 5. Equal Frequency/Quantile Binning

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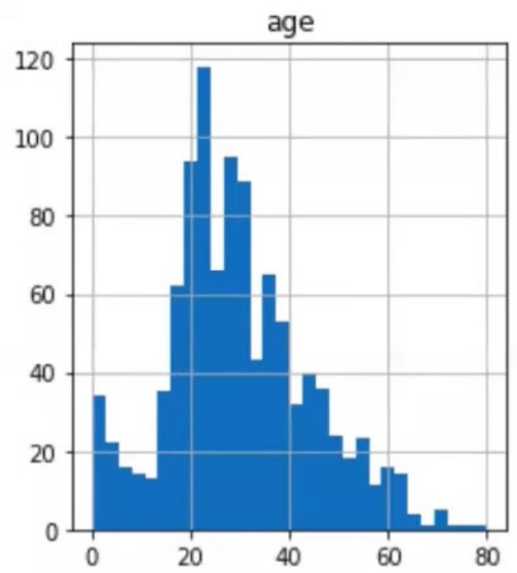


Intervals = 10

Each interval contains 10% of total observations

Intervals:
0-16; 16-20; 20-22; 22-25; ...
50-74

1) Outliers
2) Value spread
spread

0 — ? — 10th percentile

0-16 16-20 20-22

10% 20% 30%

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# 6. KMeans Binning

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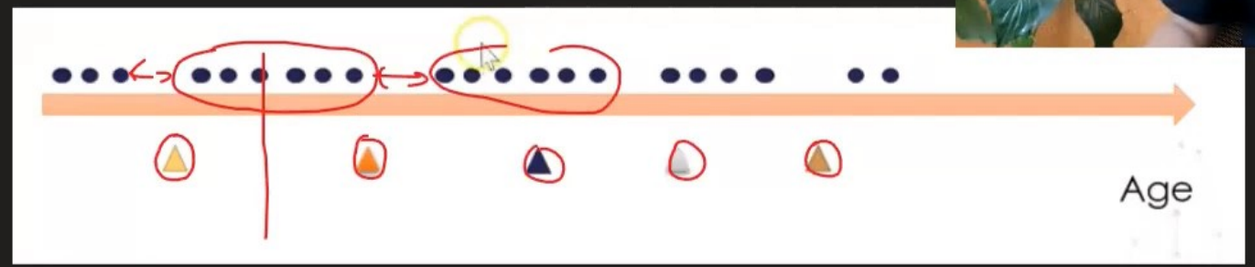
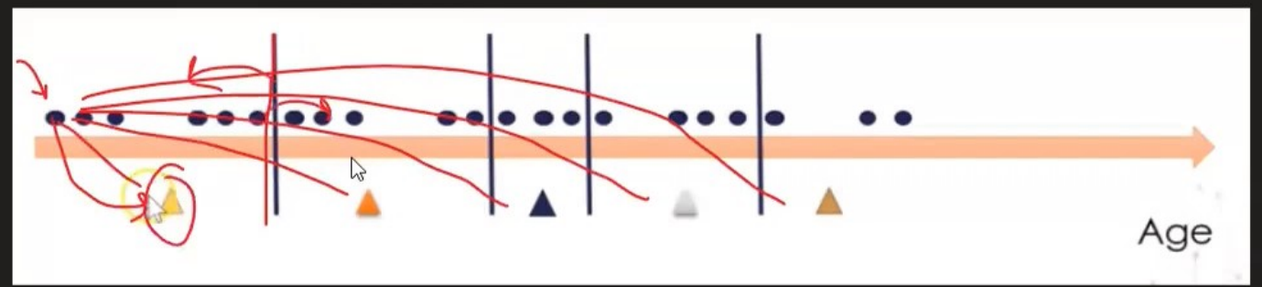
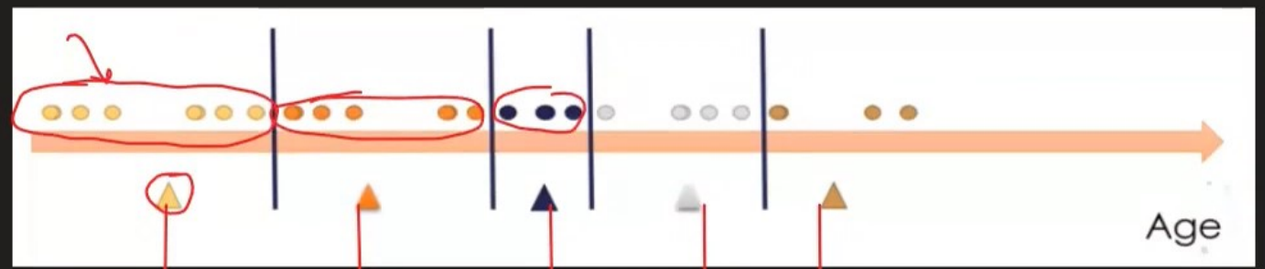
centroid
interval-5





KMeans
↳ Clustering
2D
1 OD

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# 7. Encoding the discretized variable

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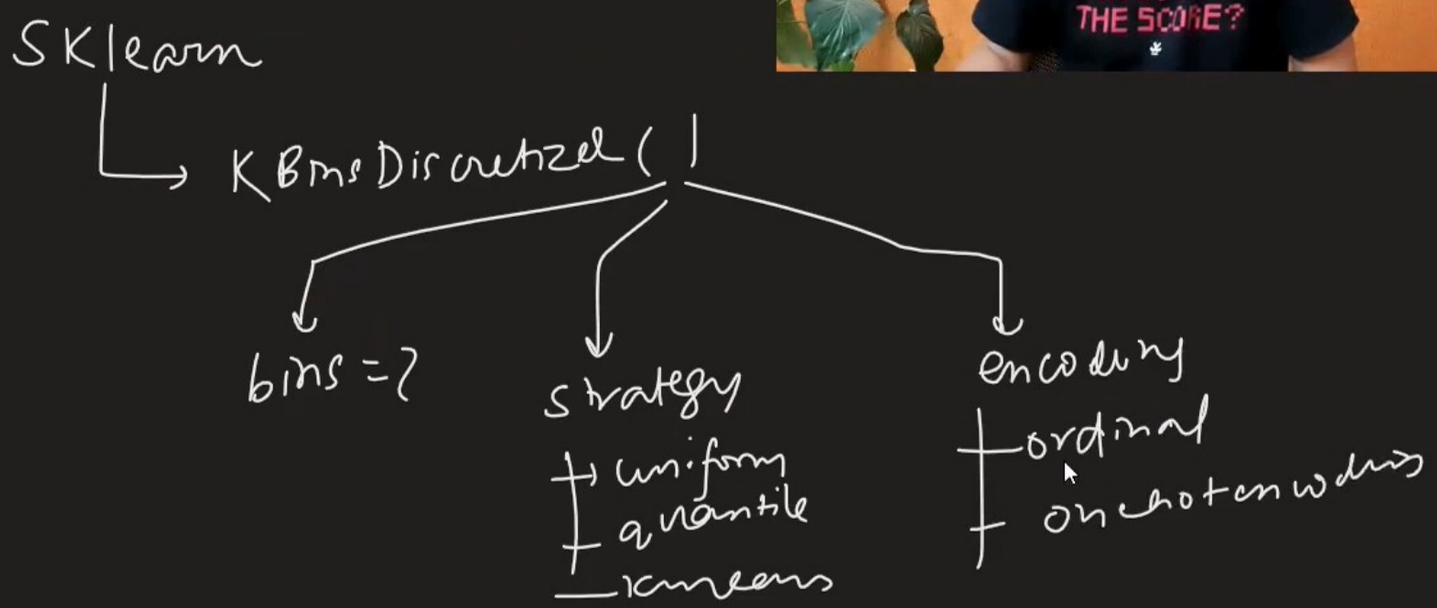


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# 9. Custom/Domain Based Binning

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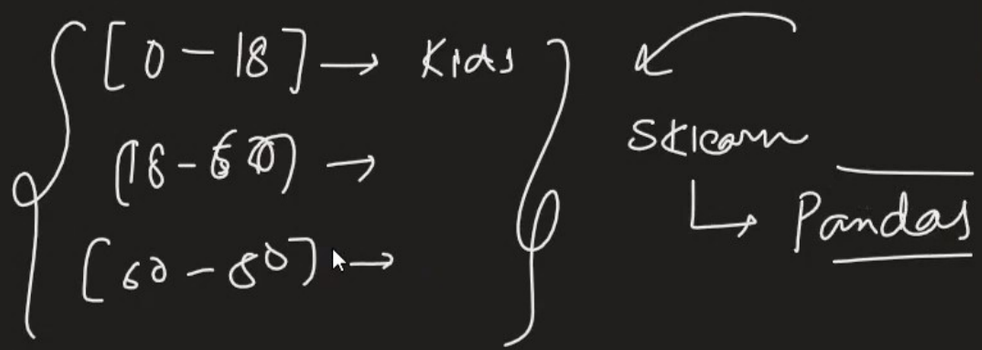


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# 10. Binarization

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0,1

image

0-255 color

Annual income

62 <

0

1

>

127.5

0

1