Visualizations

Video overview

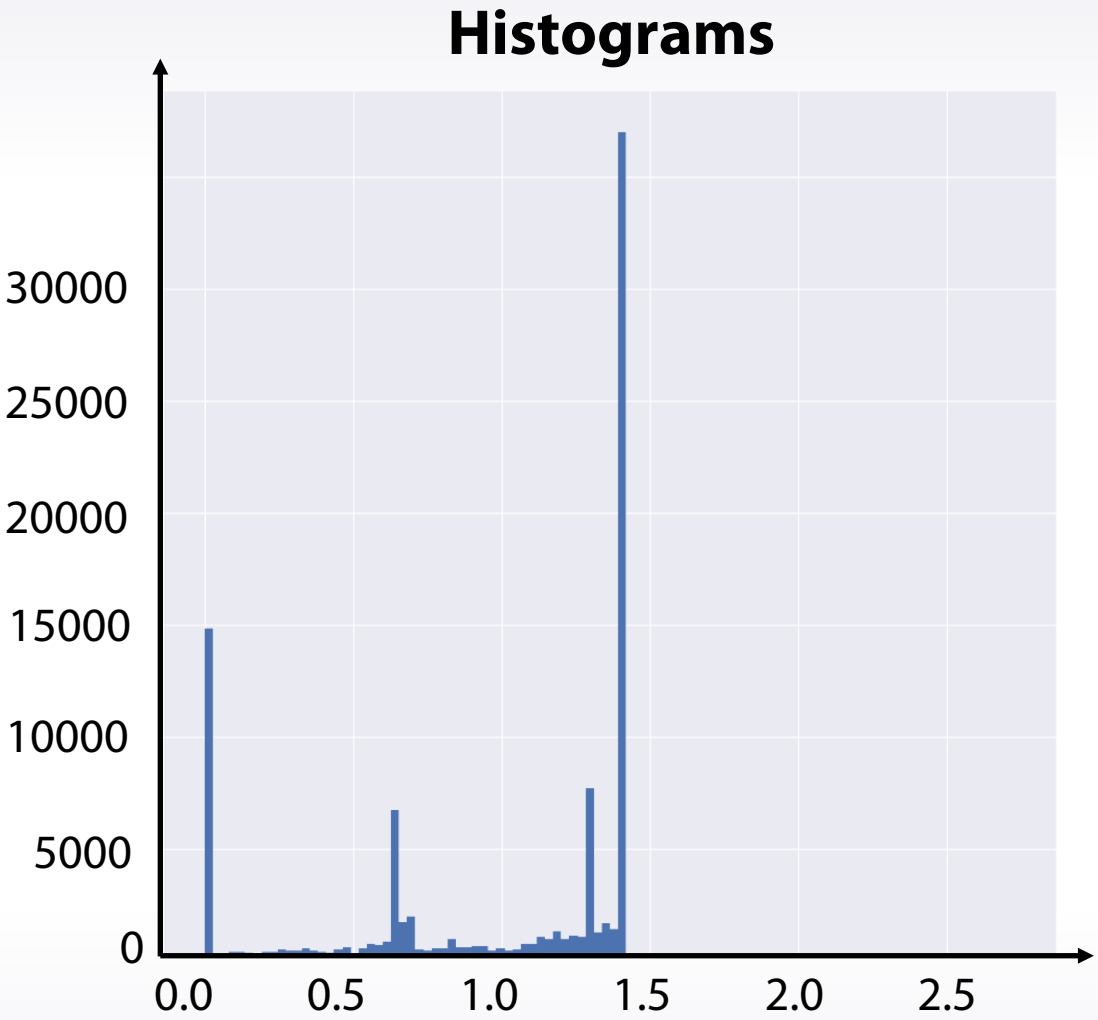
- Visualization tools to…
  - **Explore individual features**
    - Histograms
    - Plots
    - Statistics
  - **Explore feature relations**
    - Scatter plots
    - Correlation plots
    - Plot (index vs feature statistics)
    - And more

Visualizations

EDA is an art!

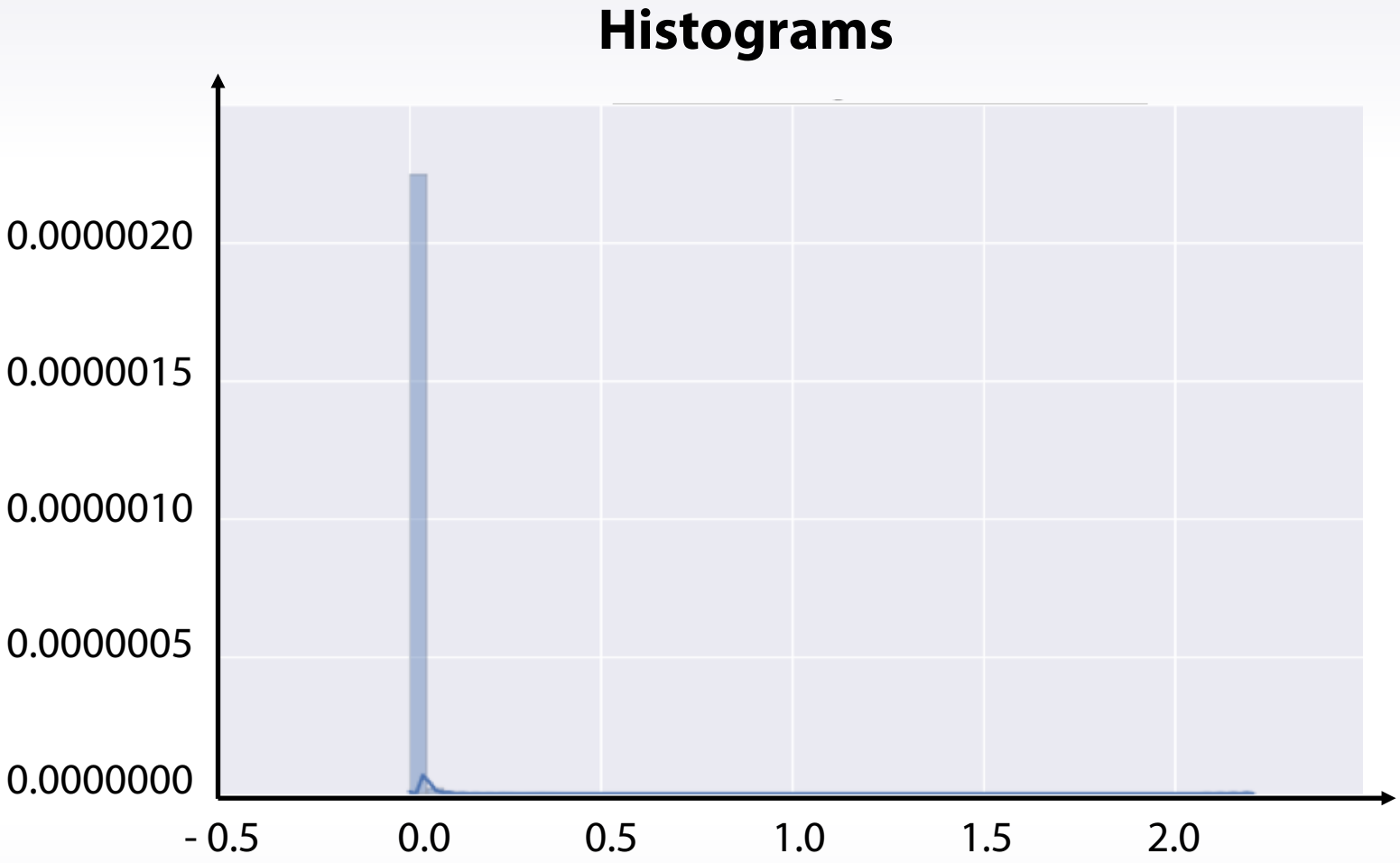
And visualizations are our art tools

Art tools



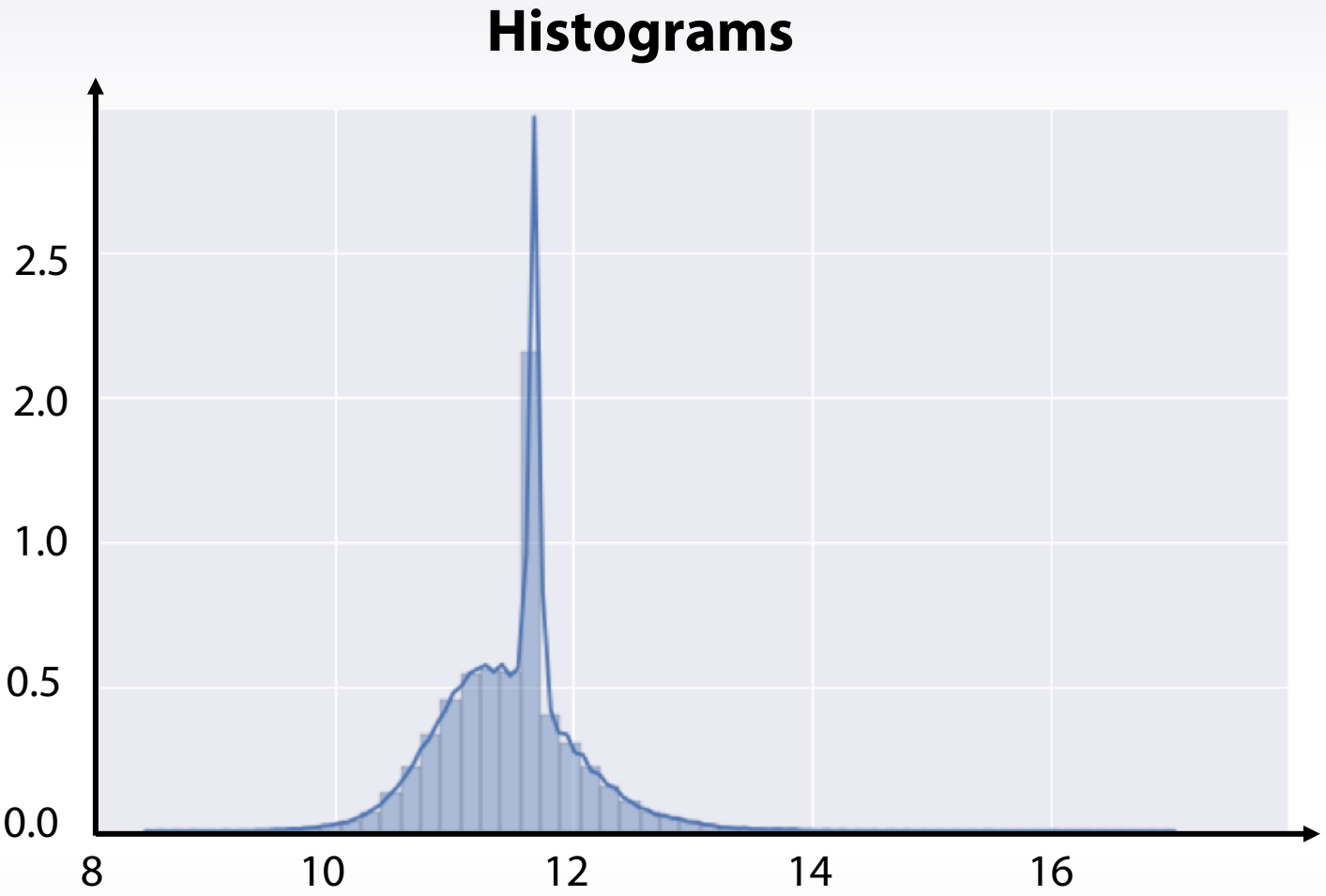

```
plt.hist(x)
```

Art tools



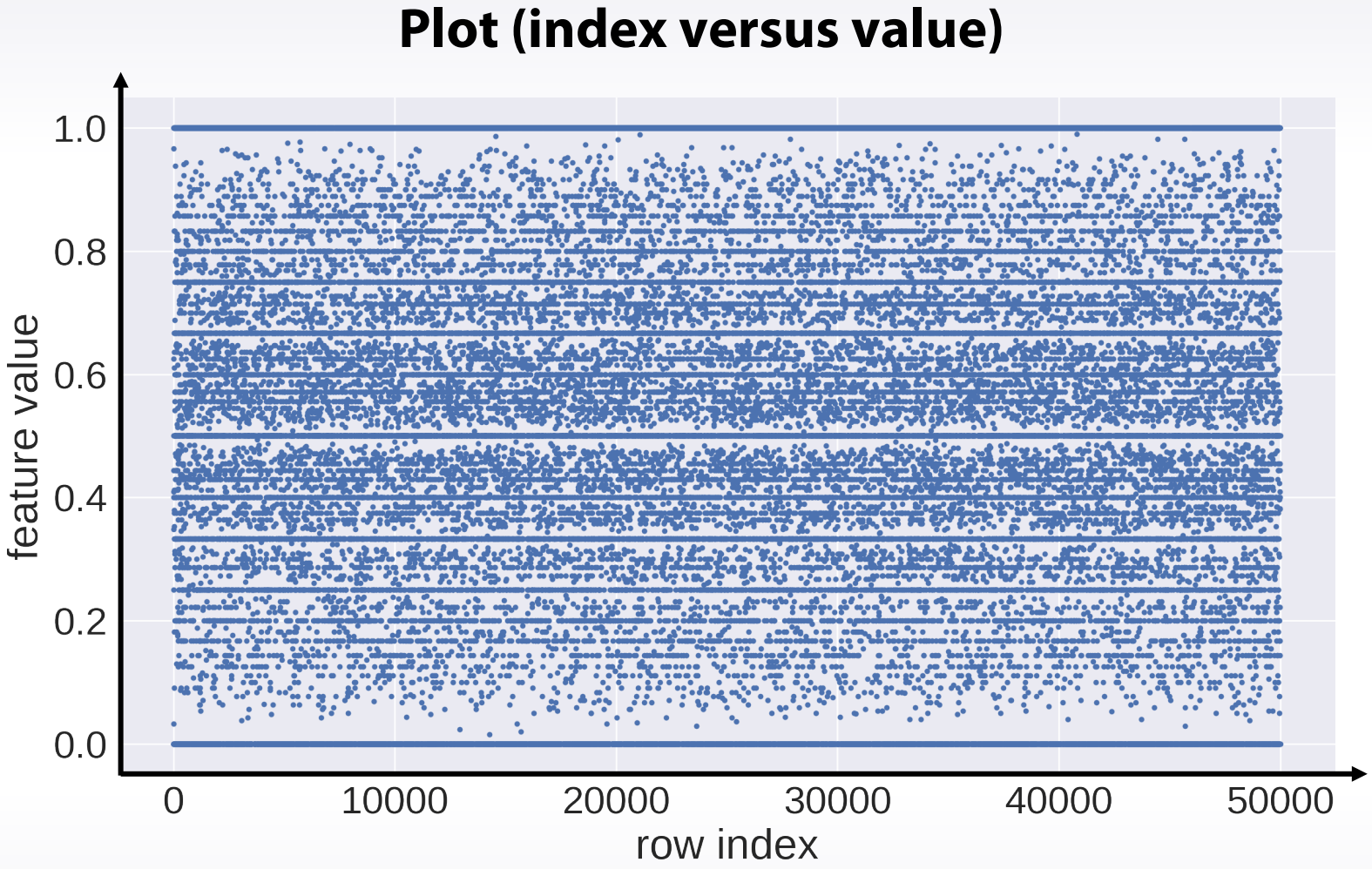

```
plt.hist(x)
```

Art tools



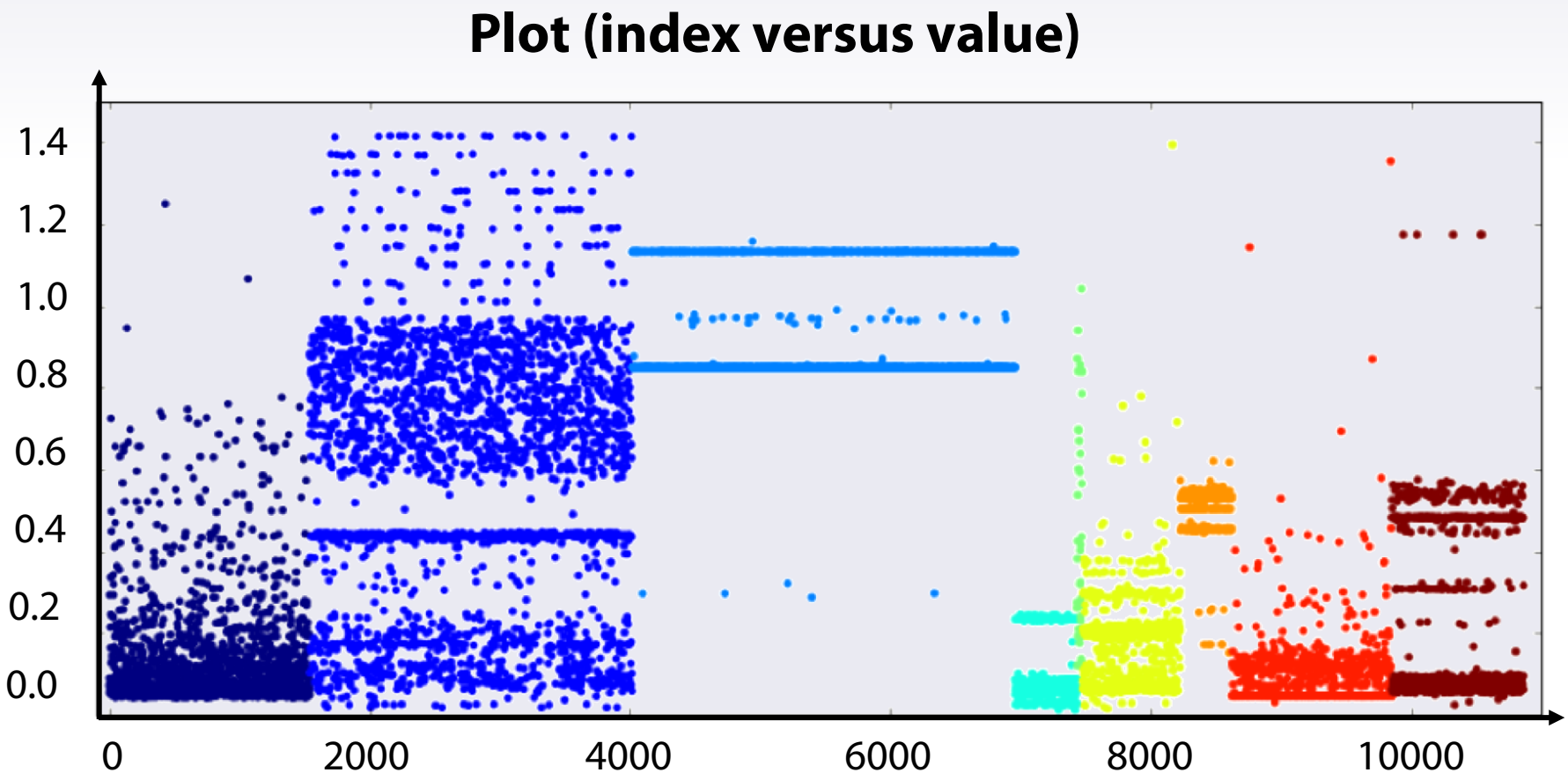

```
plt.hist(x)
```

Art tools




```
plt.plot(x,'.')
```

Art tools




```
plt.scatter(range(len(x)), x, c=y)
```

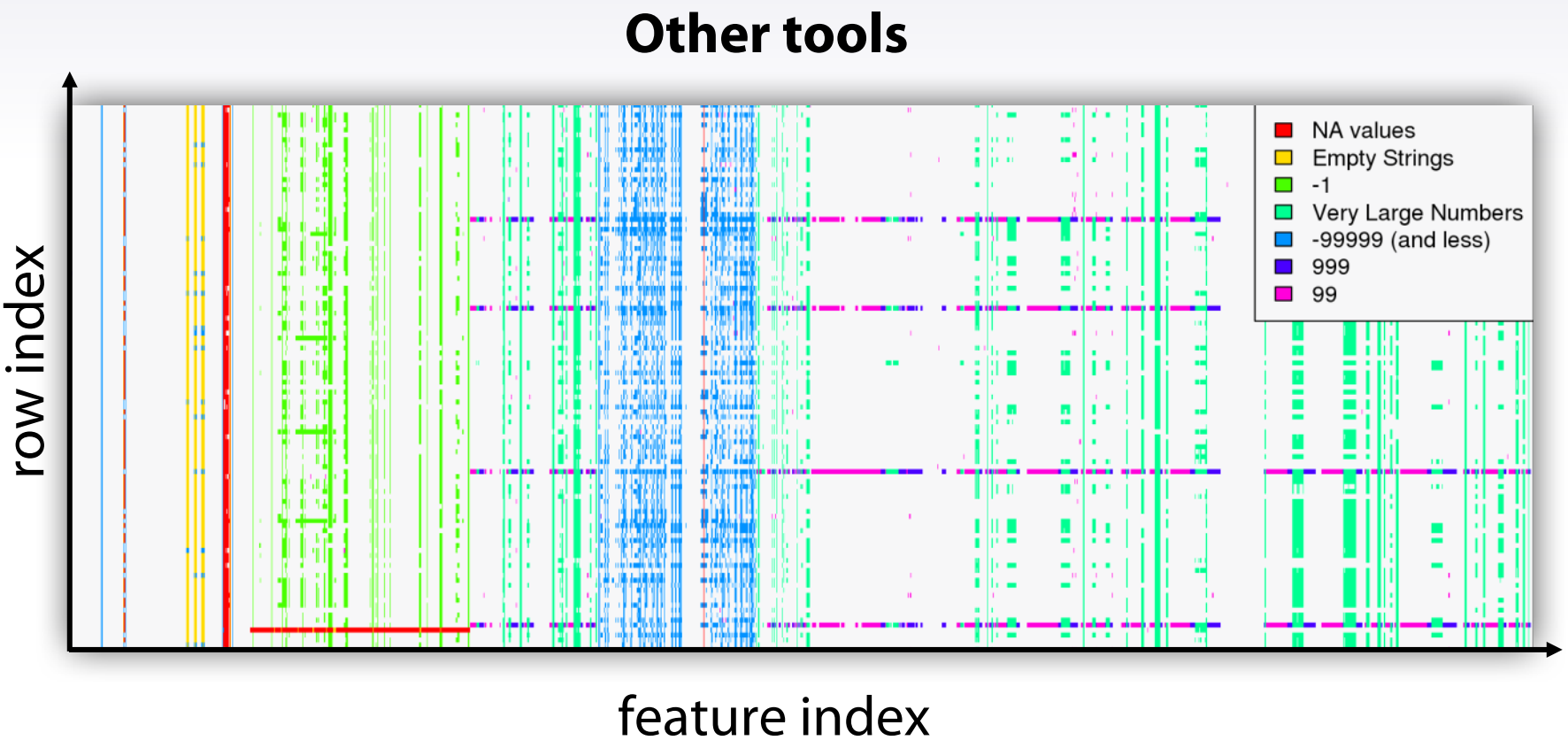
Art tools

Feature statistics

	x6	x7	x8	x13
count	50000.00000	50000.000000	48793.000000	45512.000000
mean	0.99296	0.975860	-0.000252	4428.915253
std	0.08361	0.153485	1.023282	10943.884658
min	0.00000	0.000000	-85.252444	-99.000000
25%	1.00000	1.000000	-0.255490	0.000000
50%	1.00000	1.000000	0.221047	1817.000000
75%	1.00000	1.000000	0.567620	5582.000000
max	1.00000	1.000000	3.426844	776759.000000

```
df.describe()
x.mean()
x.var()
```

Art tools




```
x.value_counts()
x.isnull()
```

Tools for individual features exploration

Histograms:

```
plt.hist(x)
```

Plot (index versus value):

```
plt.plot(x, '.')
```

Statistics:

```
df.describe()
x.mean()
x.var()
```

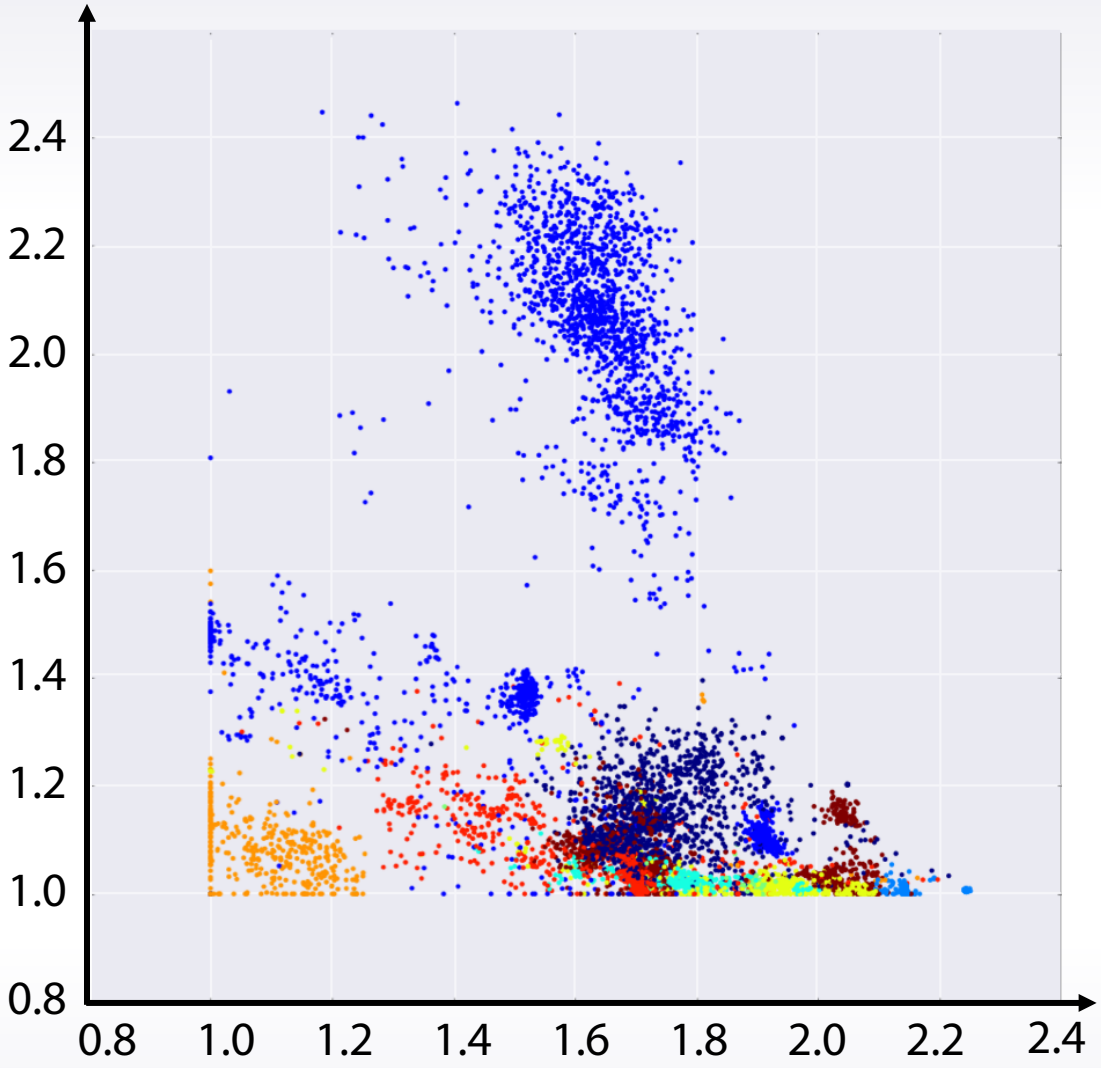
Other tools:

```
x.value_counts()
x.isnull()
```

Next in this video

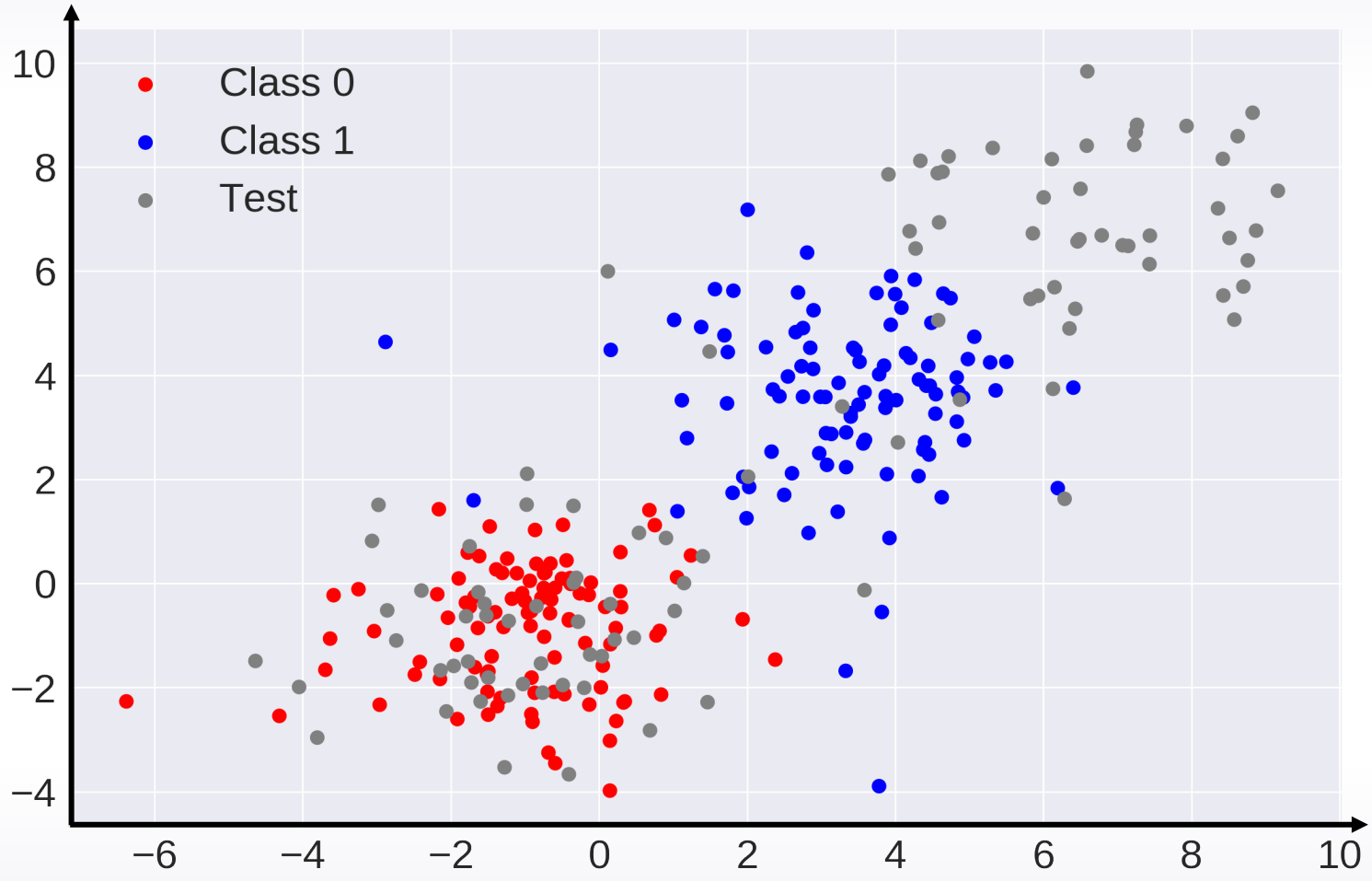
- Visualization tools to…
  - **Explore individual features**
    - Histograms
    - Plots
    - Statistics
  - **Explore feature relations**
    - Scatter plots
    - Correlation matrices
    - …

Exploring feature relations



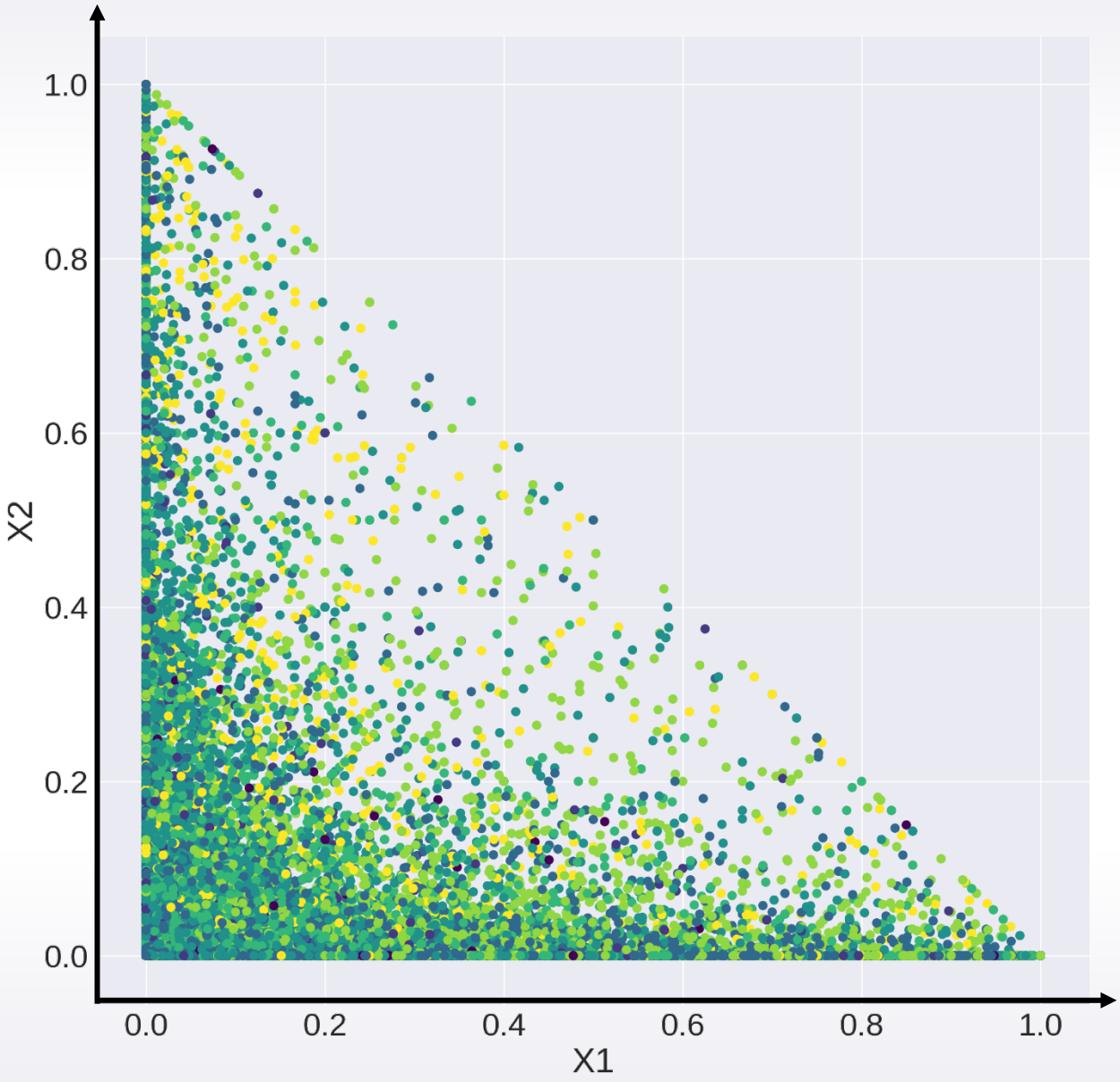

```
plt.scatter(x1, x2)
```

Exploring feature relations

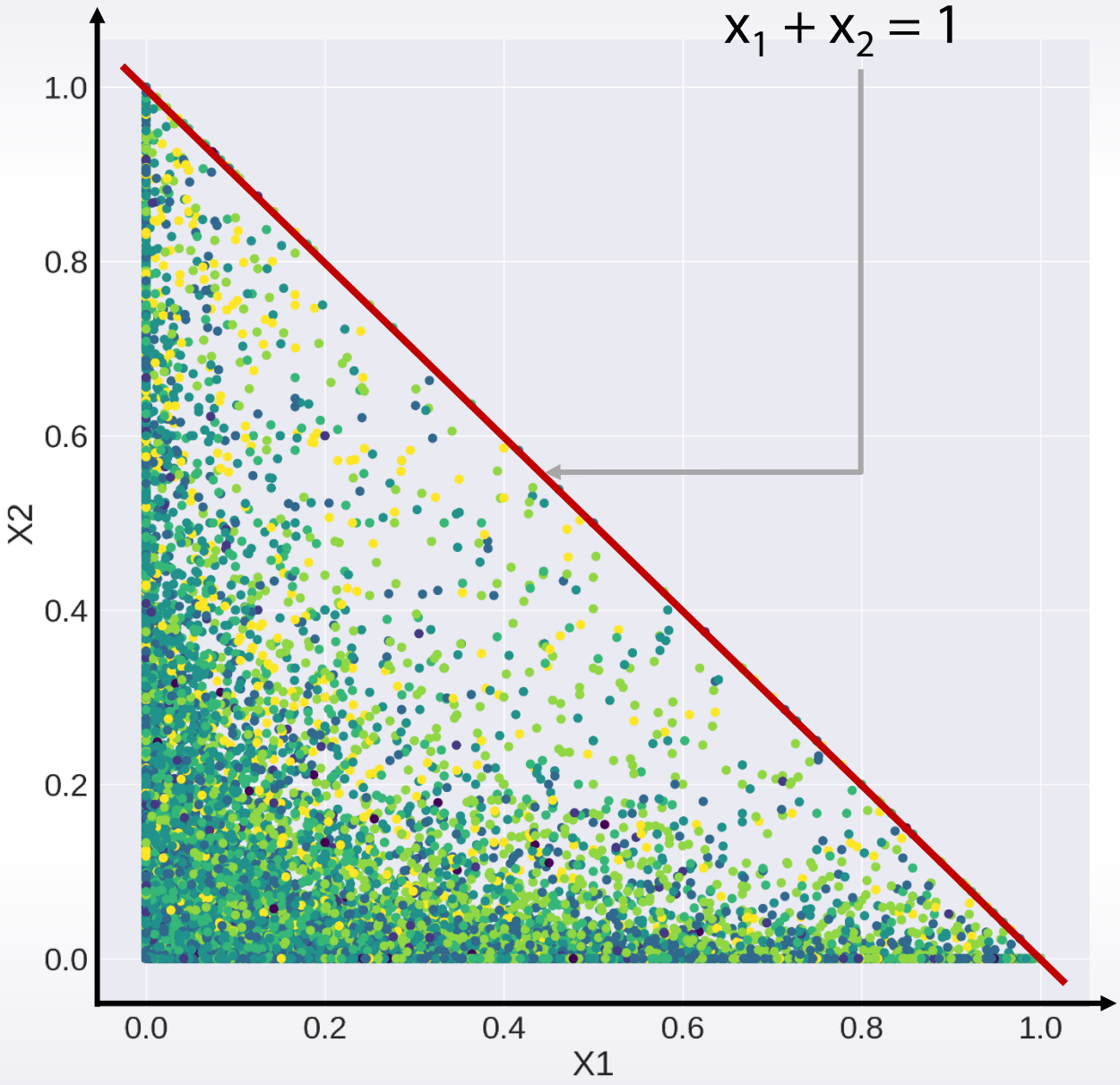



```
plt.scatter(x1, x2)
```

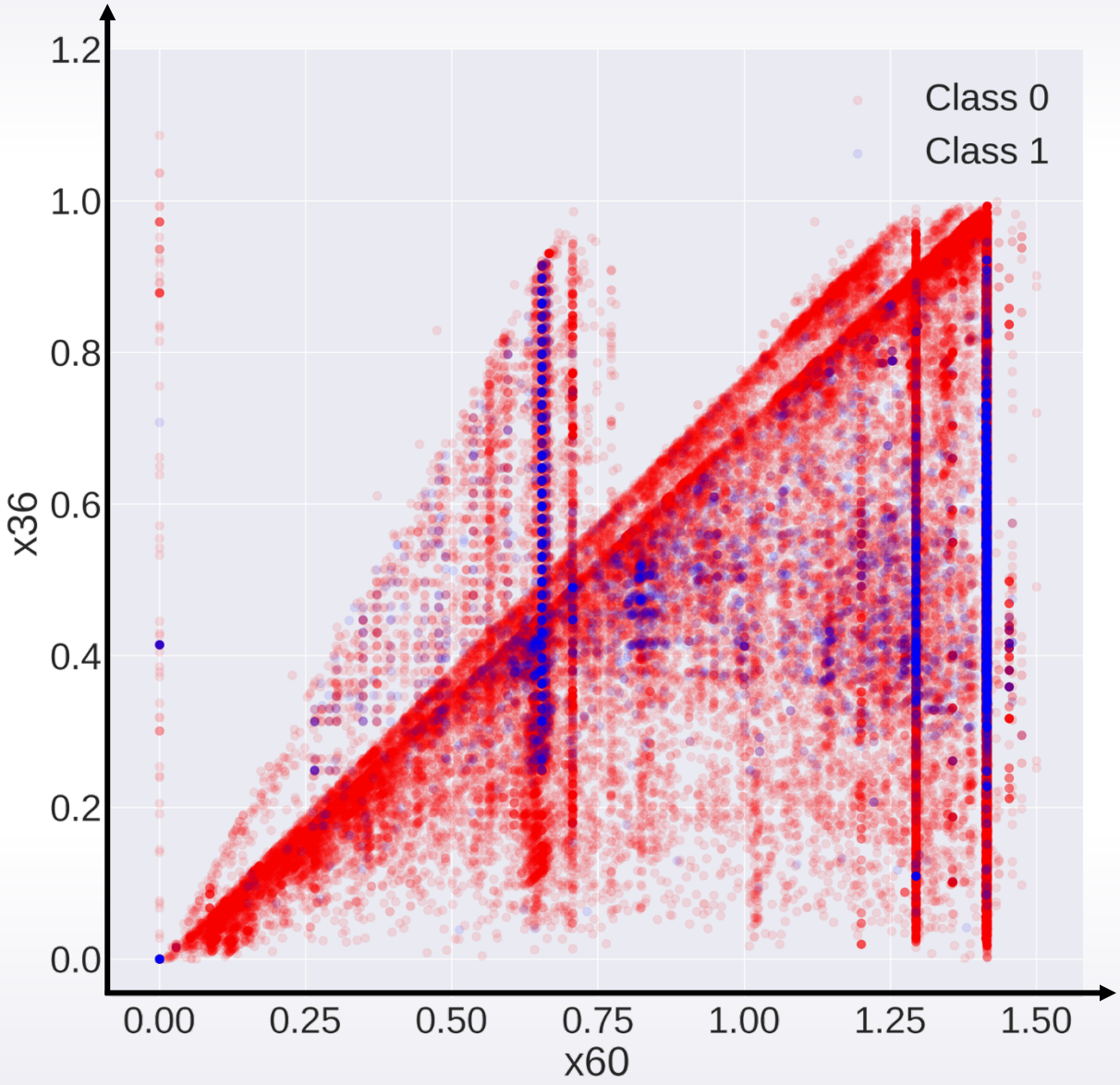
Exploring feature relations



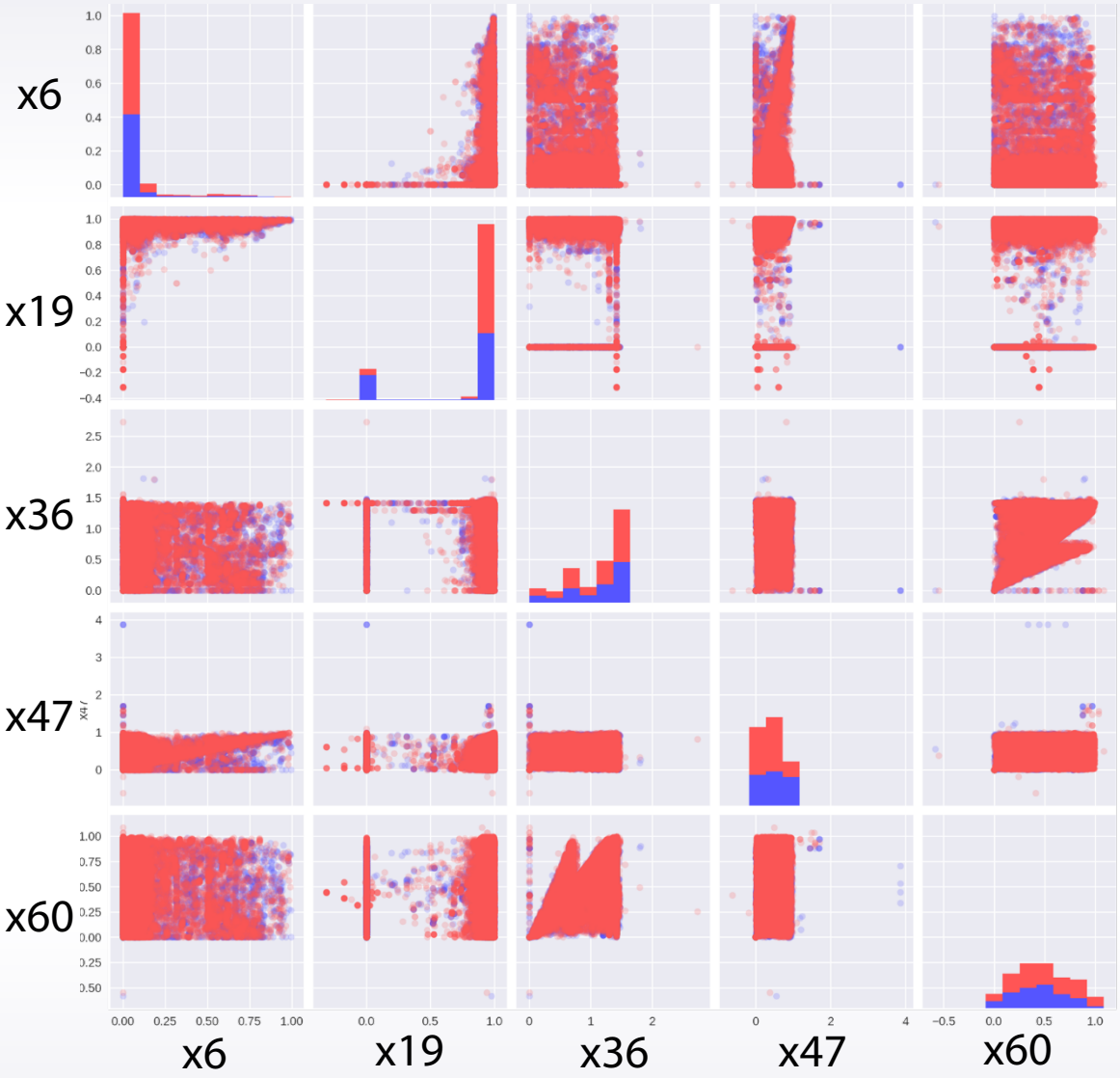
Exploring feature relations



Exploring feature relations

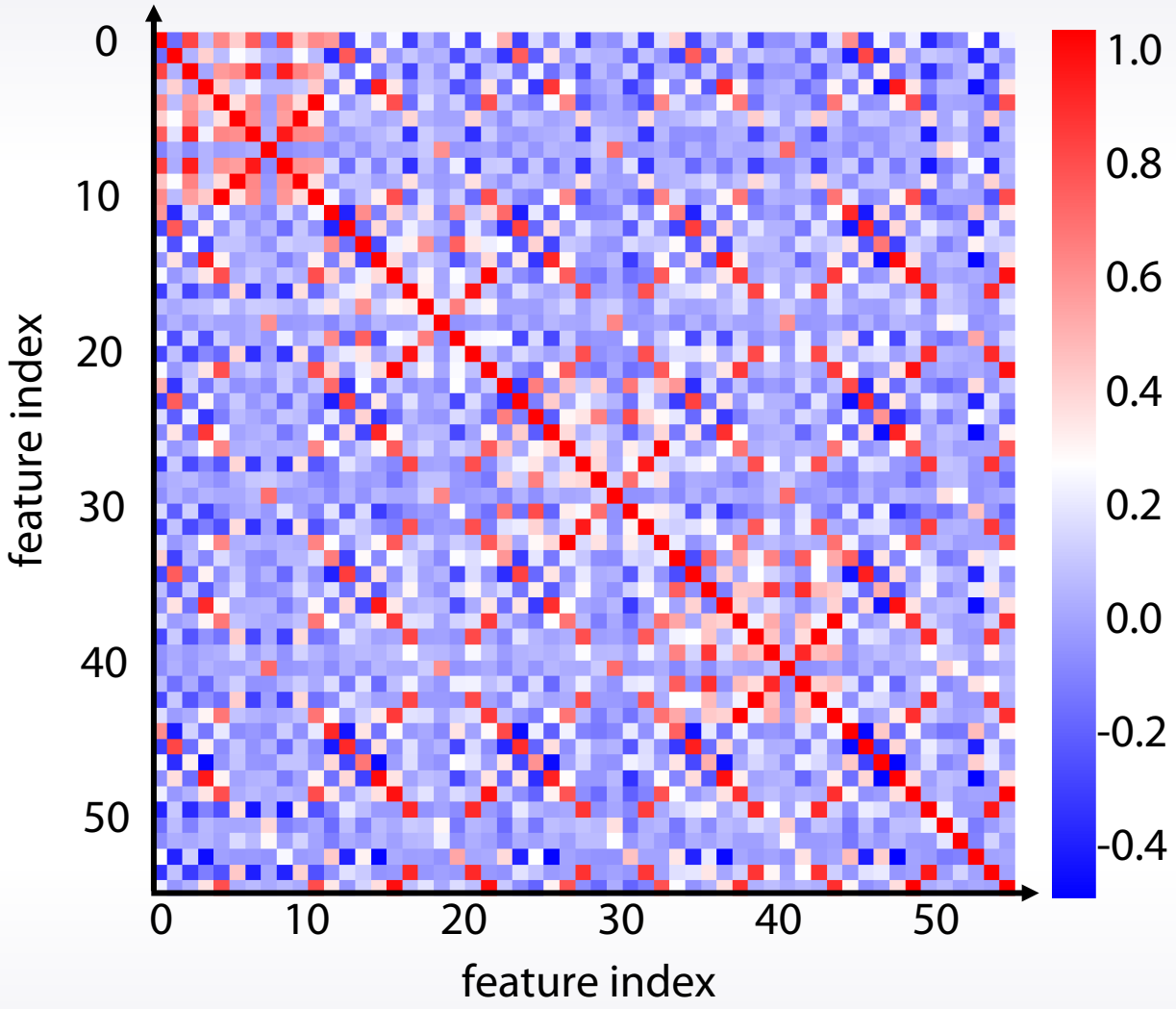


Exploring individual features: pairs



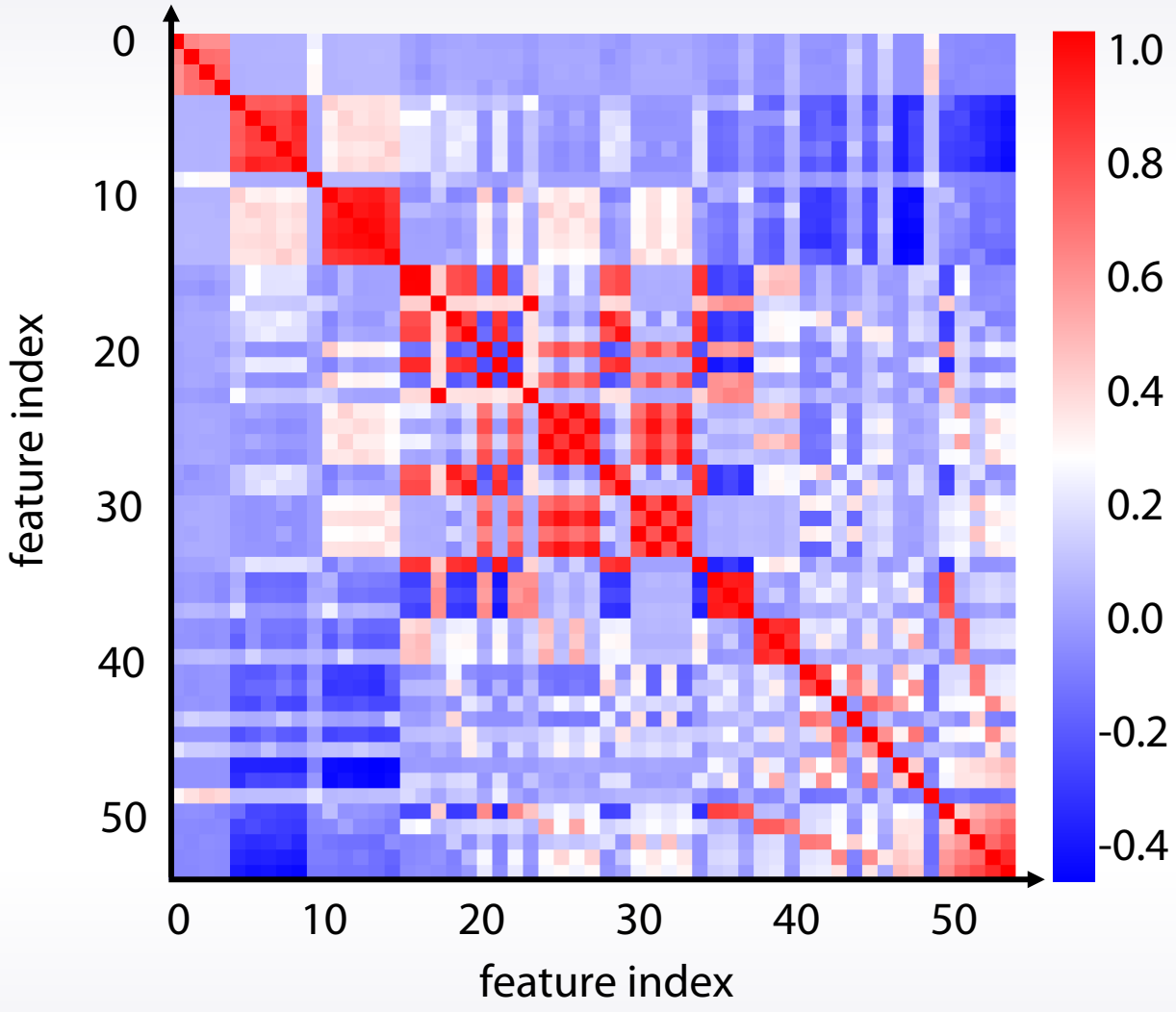

```
pd.scatter_matrix(df)
```

Exploring individual features: pairs




```
df.corr(), plt.matshow( … )
```

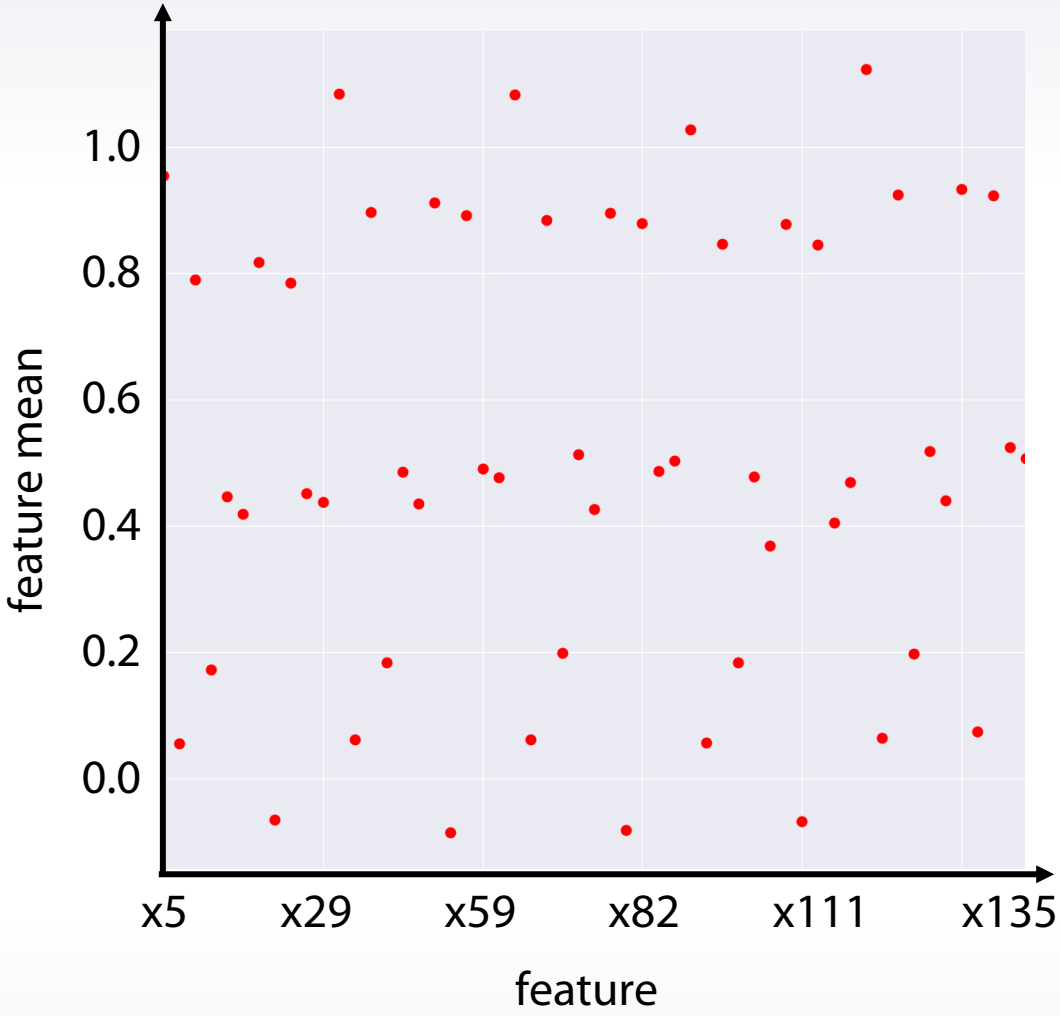
Exploring individual features: pairs/groups



Tools:

`df.corr(), plt.matshow( … )`

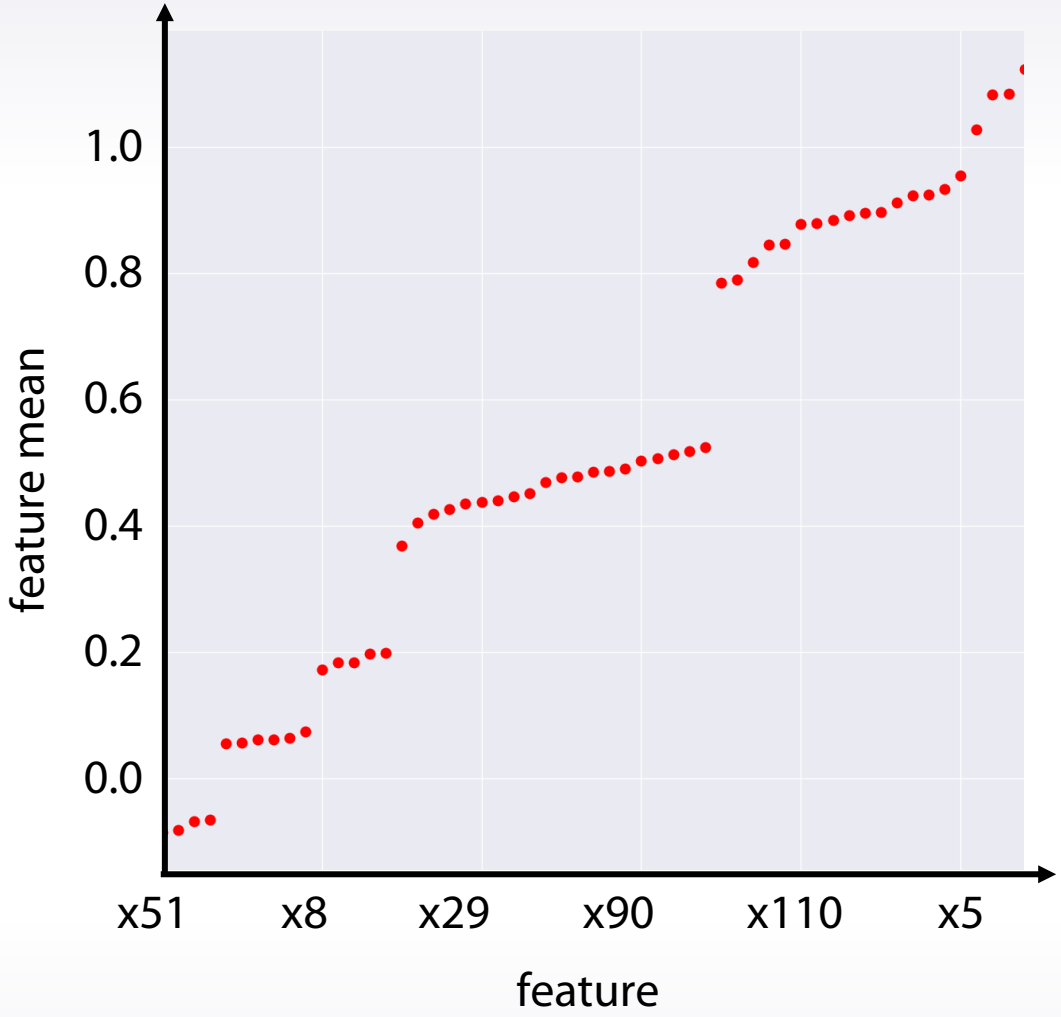
Exploring individual features: groups



Tools:

```
df.mean().plot(style='.')
```

Exploring individual features: groups



Tools:

```
df.mean().sort_values().plot(style='.')
```

Exploring individual features

Tools:

```
plt.scatter(x1, x2)
pd.scatter_matrix(df)
df.corr(), plt.matshow( … )
df.mean().sort_values().plot(style='.')
```

Conclusion

- Explore individual features
  - Histogram
  - Plot (index vs value)
  - Statistics

- Explore feature relations
  - **Pairs**
    - Scatter plot, scatter matrix
    - Corrplot
  - **Groups**
    - Corrplot + clustering
    - Plot (index vs feature statistics)