

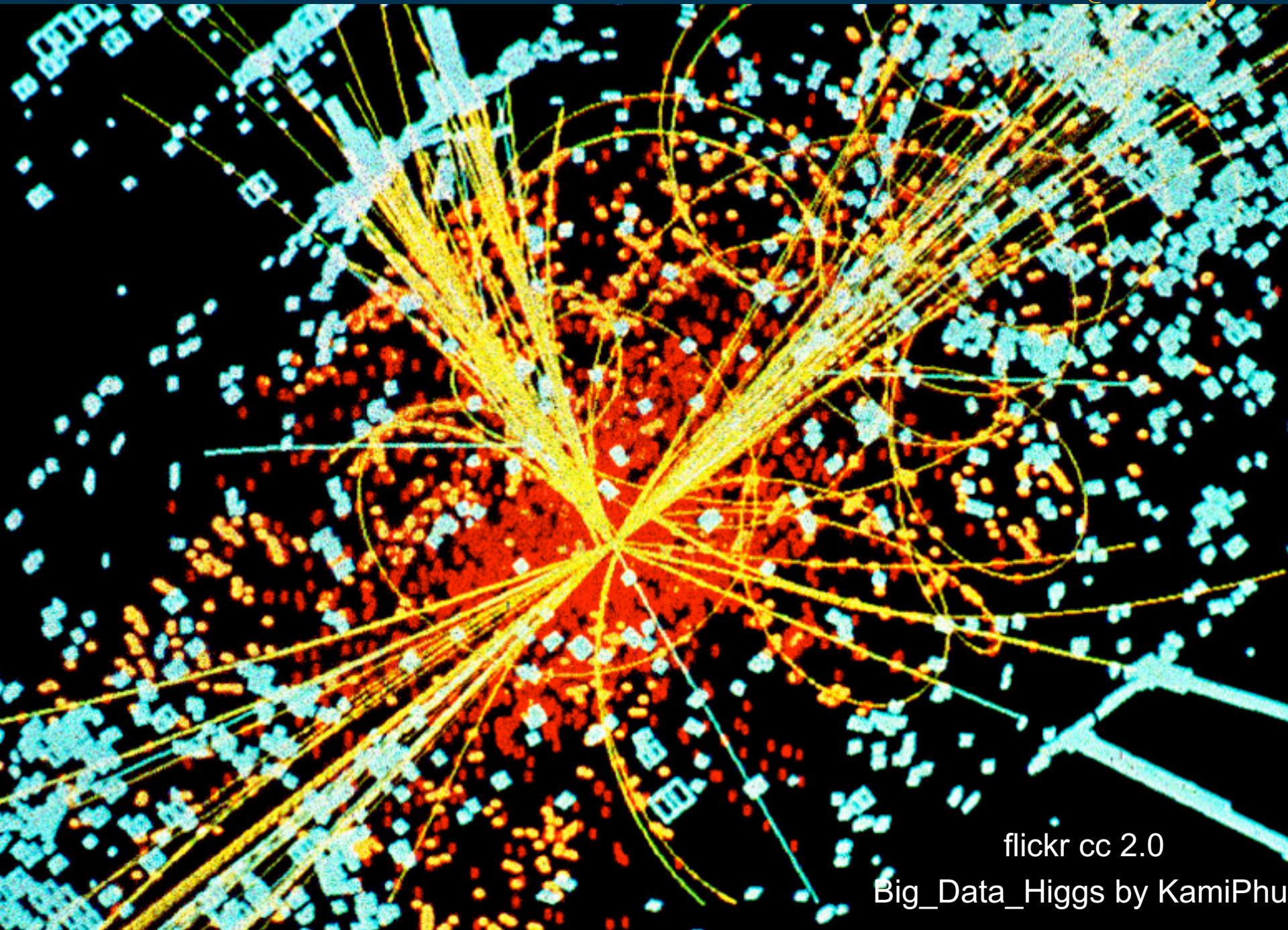
# Why Visualization?

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# Human perception is powerful.

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Star Gazing by uditha wickramanayaka



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Big\_Data\_Higgs by KamiPhu

# What is data visualization?

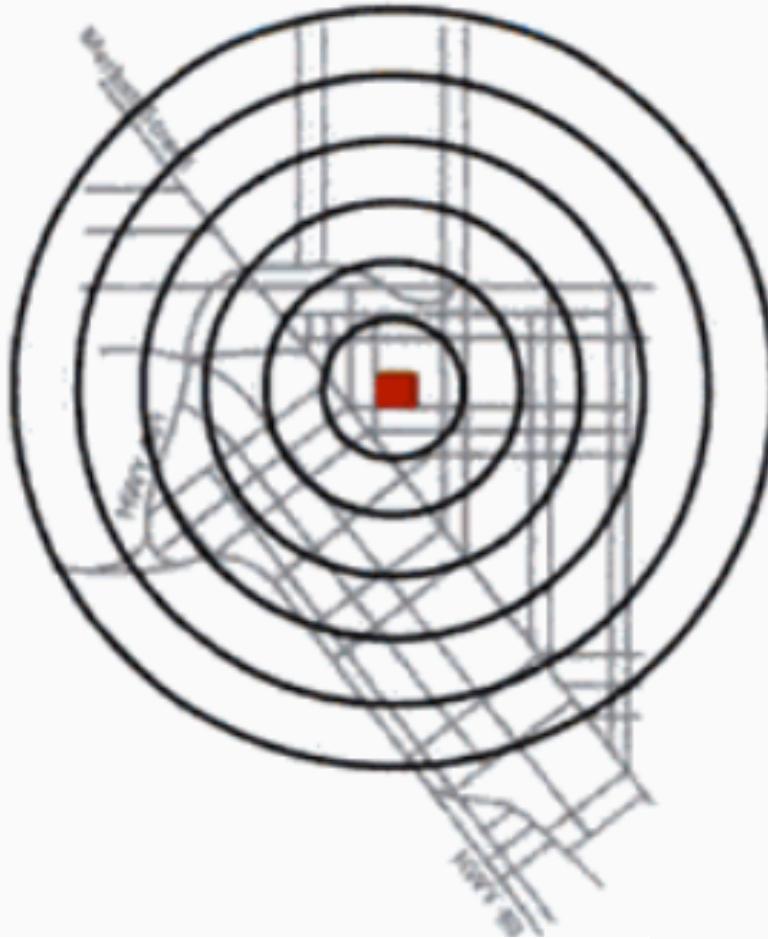
Data visualization is the creation or study of systems of abstract visual encodings of data, designed to aid human insight.

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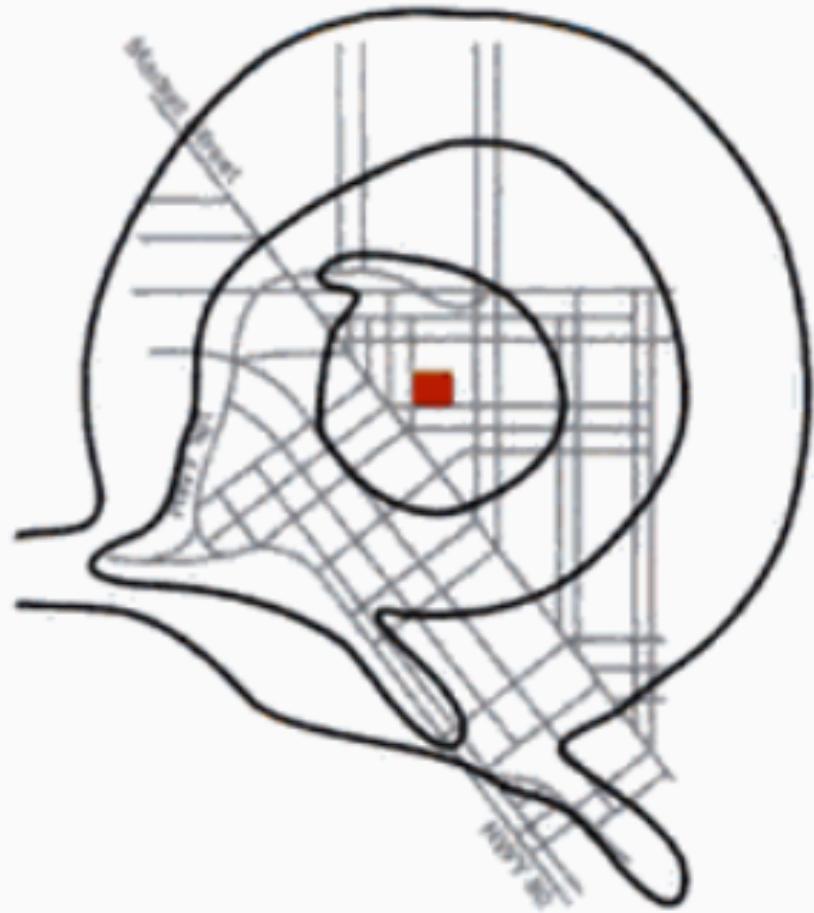
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Data visualization is the creation or study of systems of abstract visual encodings of data, **designed to aid human insight.**

a)



b)



Source: Mackinlay, Card, & Shneiderman, 1999

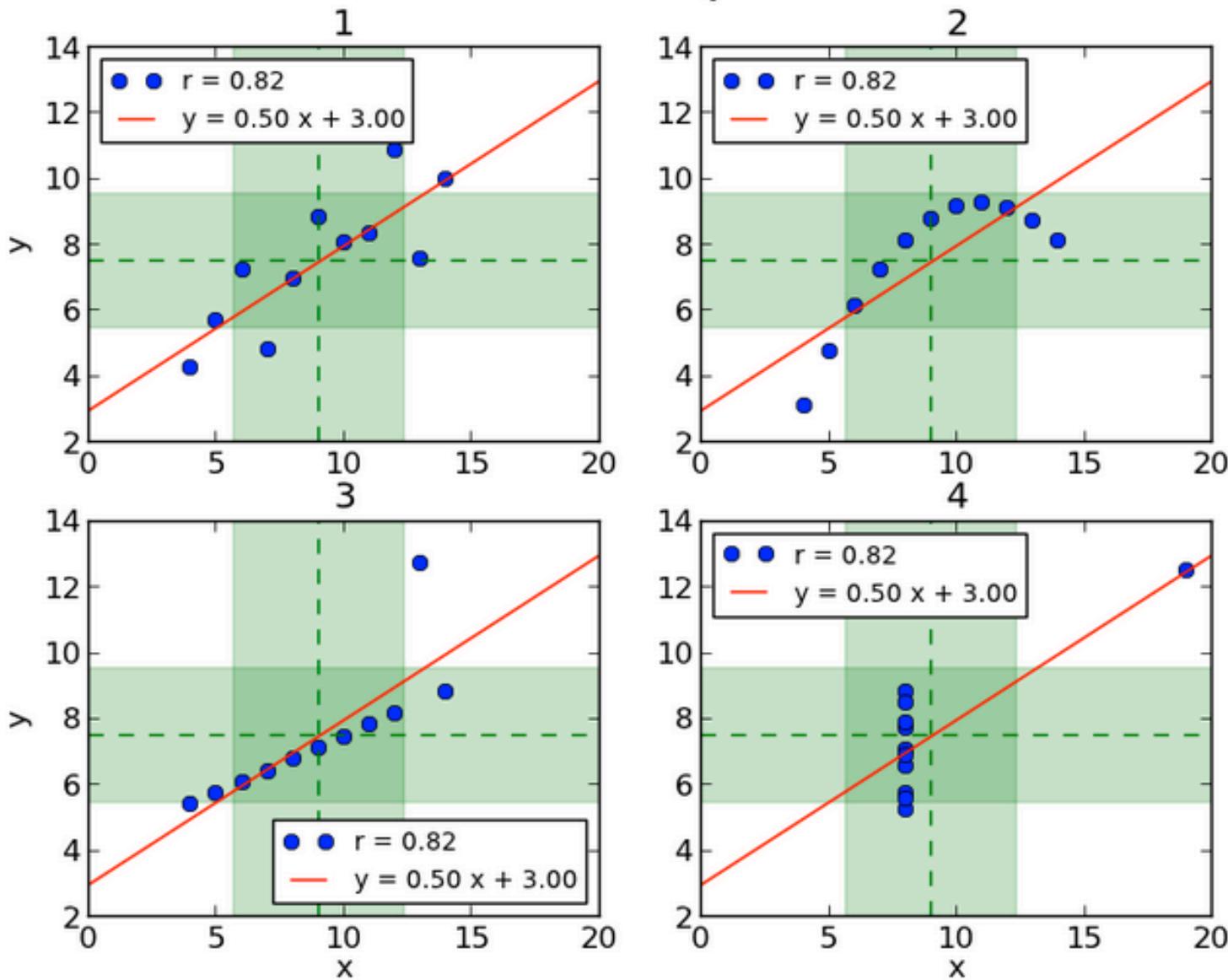
Data set	1-3	1	2	3	4	4
Variable	x	y	y	y	x	y
Obs. no.						
1 :	10.0	8.04	9.14	7.46	8.0	6.58
2 :	8.0	6.95	8.14	6.77	8.0	5.76
3 :	13.0	7.58	8.74	12.74	8.0	7.71
4 :	9.0	8.81	8.77	7.11	8.0	8.84
5 :	11.0	8.33	9.26	7.81	8.0	8.47
6 :	14.0	9.96	8.10	8.84	8.0	7.04
7 :	6.0	7.24	6.13	6.08	8.0	5.25
8 :	4.0	4.26	3.10	5.39	19.0	12.50
9 :	12.0	10.84	9.13	8.15	8.0	5.56
10 :	7.0	4.82	7.26	6.42	8.0	7.91
11 :	5.0	5.68	4.74	5.73	8.0	6.89

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[Anscombe, 1973]

Mean of x	9
Sample variance of x	11
Mean of y	7.50
Sample variance of y	4.125
Correlation between x and y	0.816
Linear regression line	$y = 3 + 0.5x$

## Anscombe's Quartet



Source: <http://informatique-python.readthedocs.io>

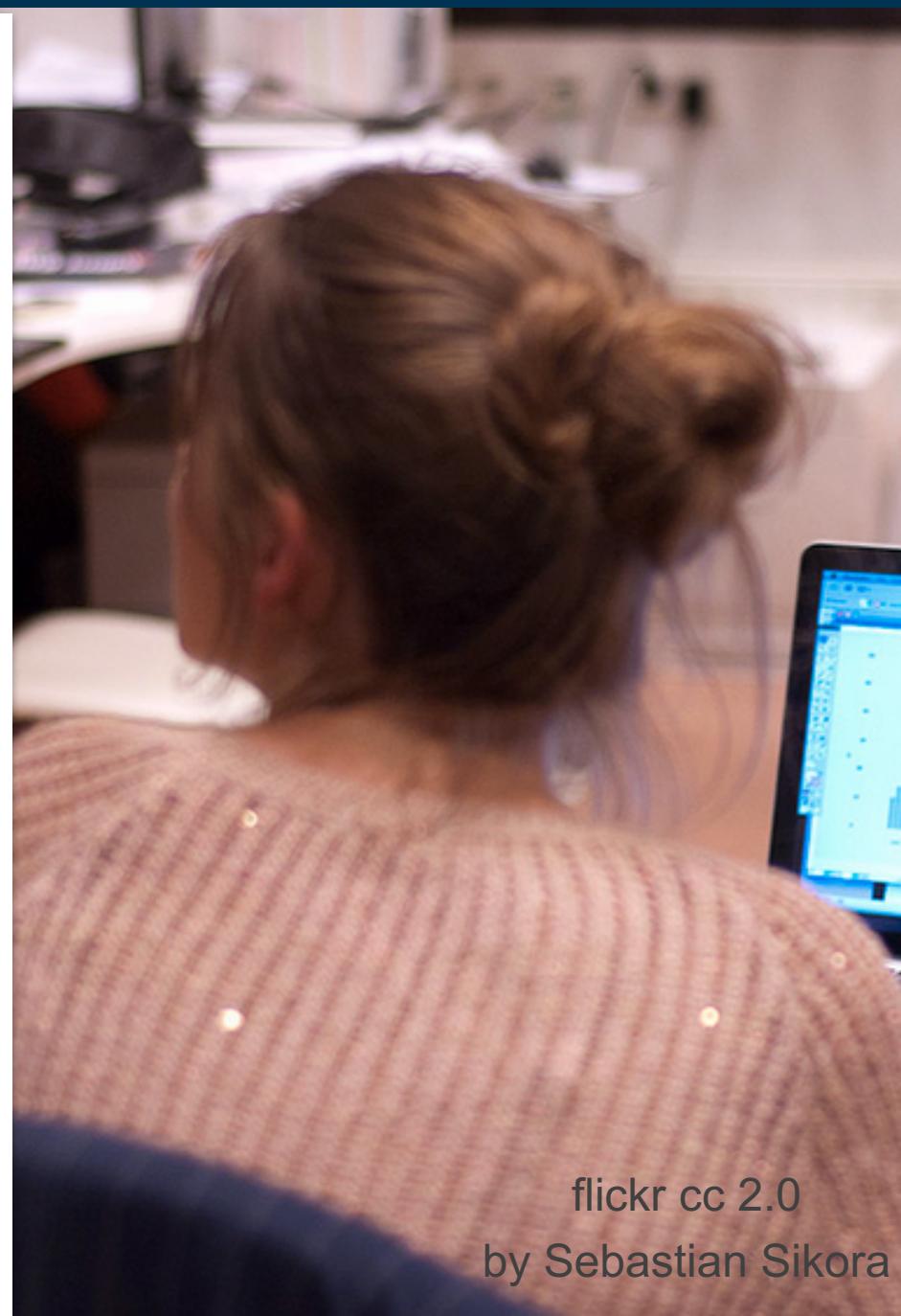
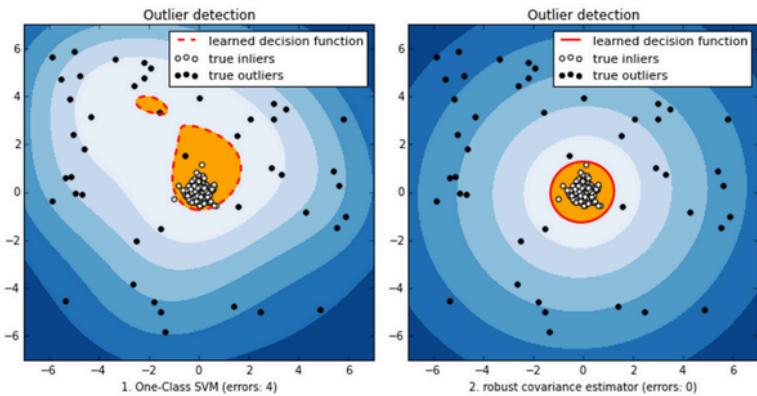
# In Data Science

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**Derive value** from data to provide  
actionable insights

```
[a.collections[0], b, c],
['learned decision function', 'true inliers', 'true outliers'],
prop=matplotlib.font_manager.FontProperties(size=11)
subplot.set_xlabel("%d. %s (errors: %d)" % (i + 1, clf_name, n_errors))
subplot.set_xlim((-7, 7))
subplot.set_ylim((-7, 7))
plt.subplots_adjust(0.04, 0.1, 0.96, 0.94, 0.1, 0.26)

plt.show()
```



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by Sebastian Sikora

# Berkeley

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INFORMATION