



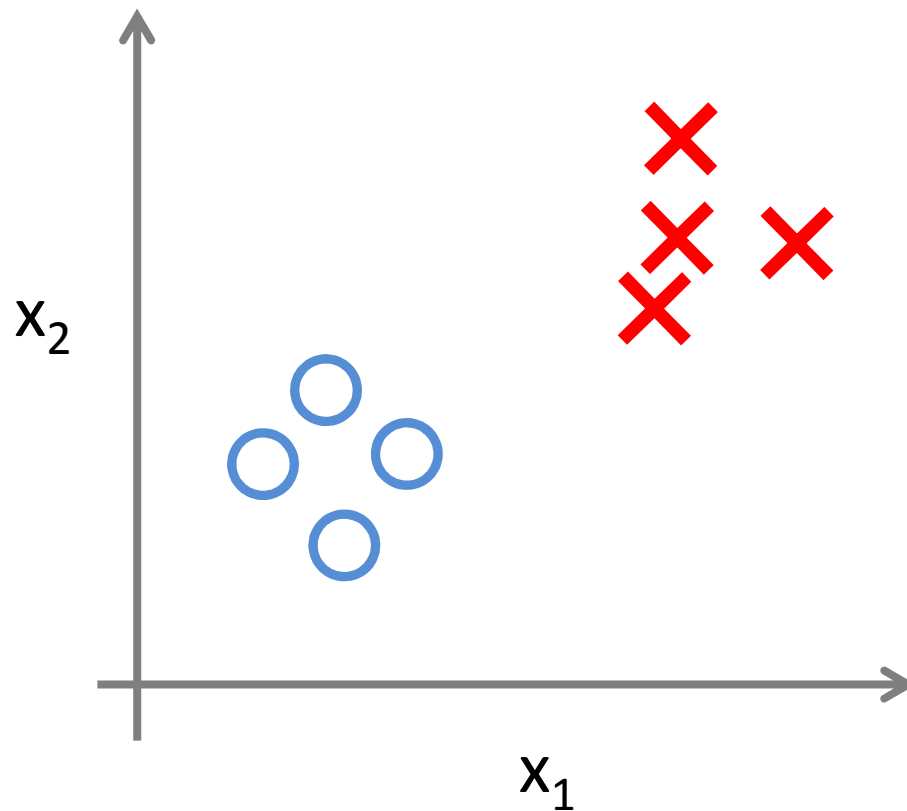
Machine Learning

# Introduction

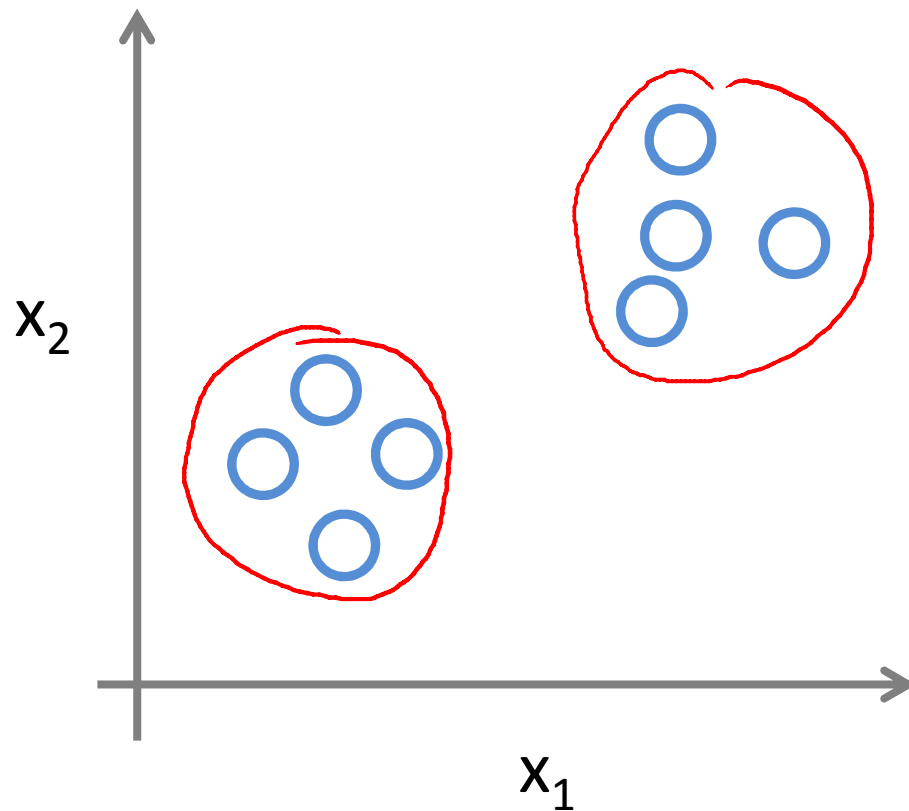
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# Unsupervised Learning

# Supervised Learning



# Unsupervised Learning



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**BP Kills Macondo, But Its Legacy Lives On**

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By James Herron

BP confirmed late Sunday that the Macondo well that leaked almost five million barrels of oil into the Gulf of Mexico has been permanently sealed, but the well will continue to affect BP and the wider oil industry for many years.

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**BP oil spill cost hits nearly \$10bn**

BP has set up a \$20bn compensation fund after the Deepwater Horizon disaster, which has so far paid out 19,000 claims totalling more than \$240m

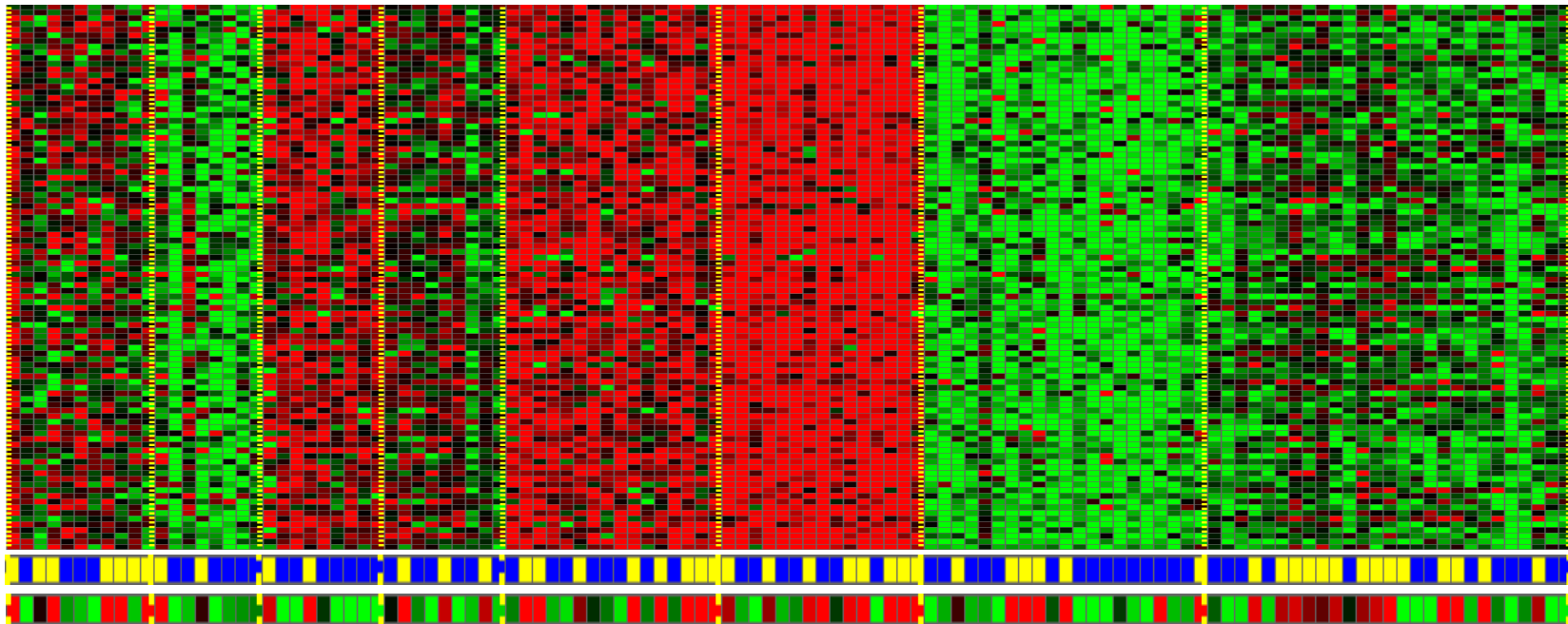
Julia Kollewe

guardian.co.uk Monday 20 September 2010 08:33 BST

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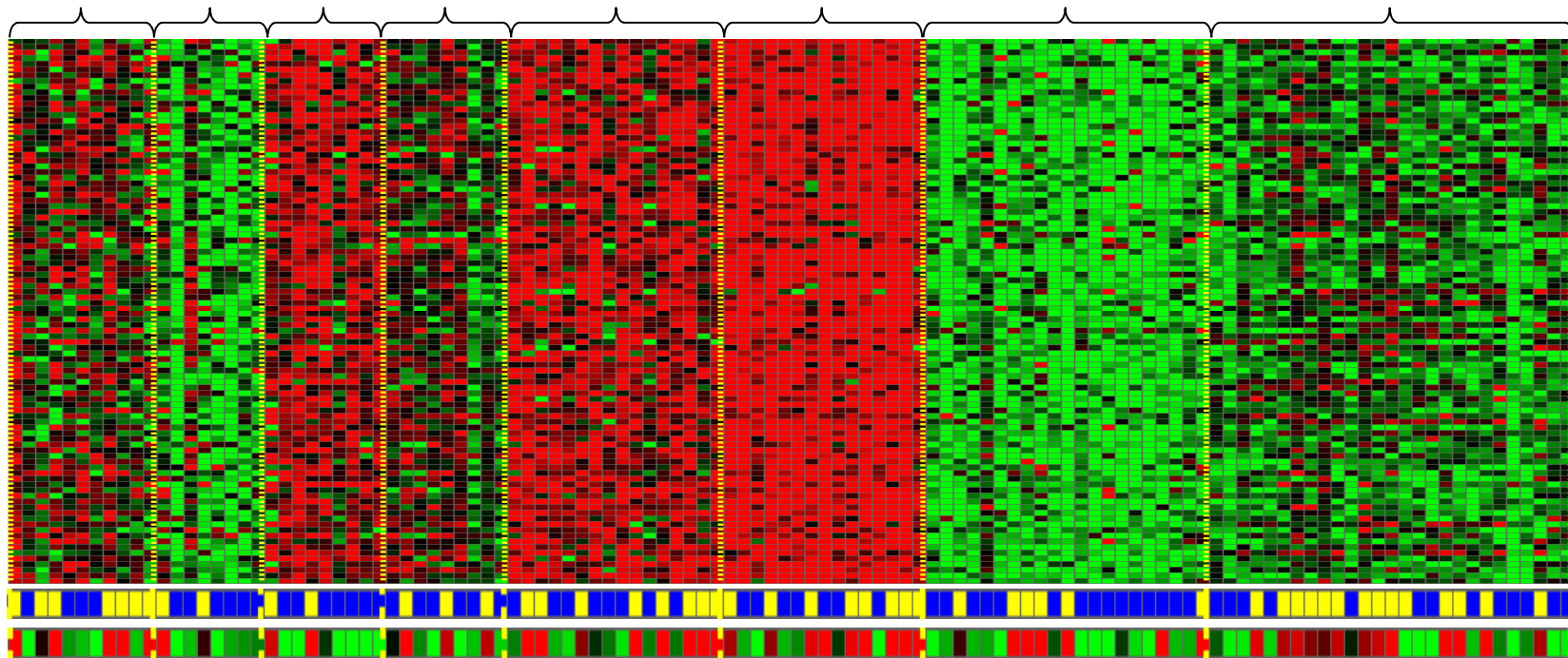
BP's costs for the Deepwater Horizon disaster have hit \$10bn. Photograph: Ho/Reuters

Genes



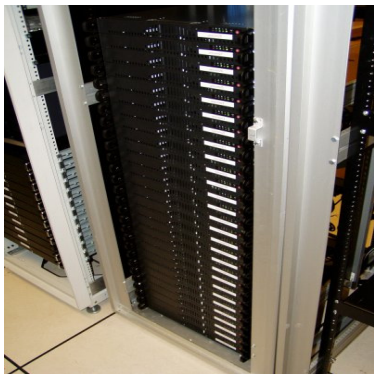
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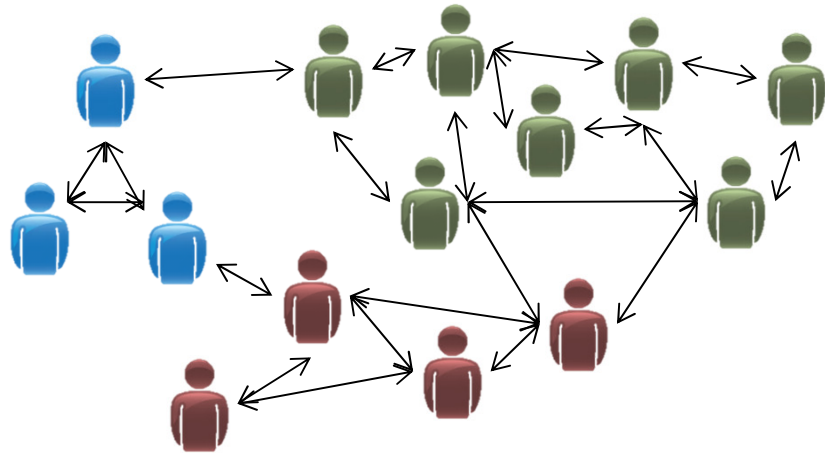


Individuals





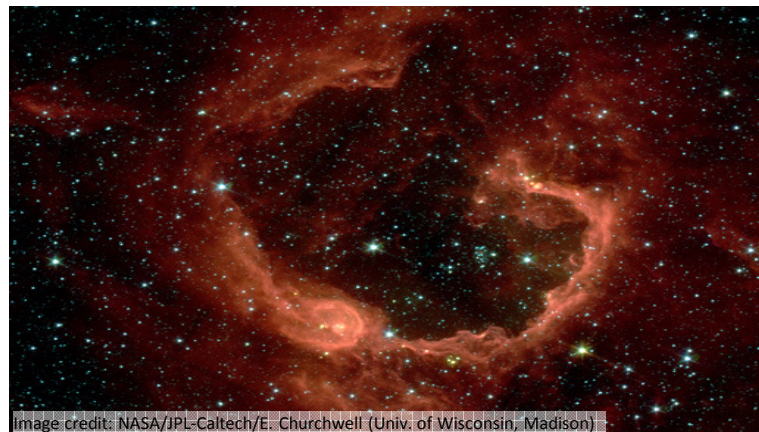
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Social network analysis



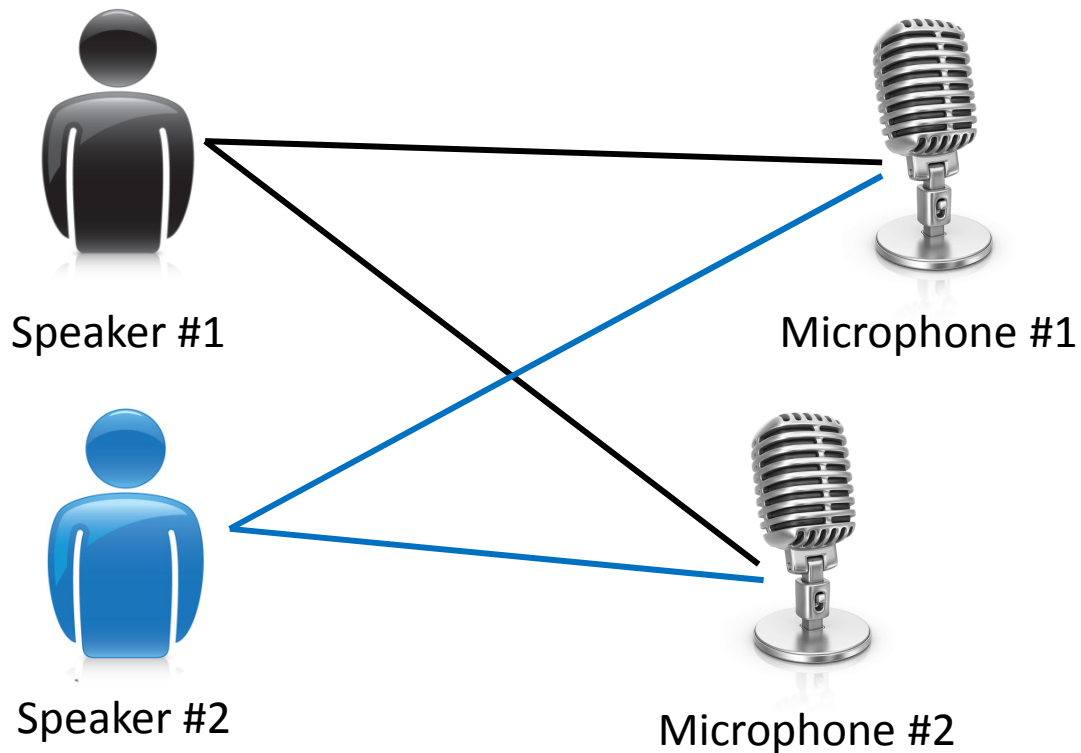
Market segmentation



Astronomical data analysis



# Cocktail party problem



Microphone #1: 🔊

Output #1: 🔊

Microphone #2: 🔊

Output #2: 🔊

---

Microphone #1: 🔊

Output #1: 🔊

Microphone #2: 🔊

Output #2: 🔊

# Cocktail party problem algorithm

```
[W,s,v] = svd(( repmat(sum(x.*x,1),size(x,1),1).*x)*x');
```

Of the following examples, which would you address using an unsupervised learning algorithm? (Check all that apply.)

- ☐ Given email labeled as spam/not spam, learn a spam filter.
- ☒ Given a set of news articles found on the web, group them into set of articles about the same story.
- ☒ Given a database of customer data, automatically discover market segments and group customers into different market segments.
- ☐ Given a dataset of patients diagnosed as either having diabetes or not, learn to classify new patients as having diabetes or not.

