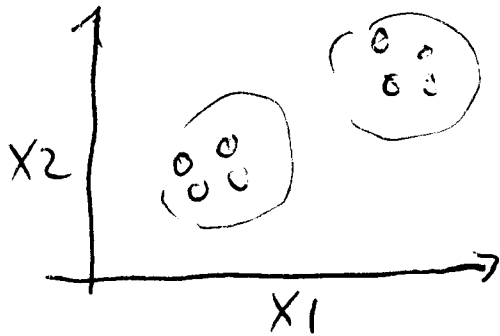


# UNSUPERVISED LEARNING



Here is Dataset,  
can you find some structure  
in the data?

"Clustering algorithm".

Example of UNSUPERVISED LEARNING  
eg. Google News.

Title } clustered topics.  
Source | Source | Source ... }

- Not telling you in example of types.
- Here is data, can you categories or put them in types, (

- Organize Computing clusters.
- Social Network Analysis -
- Market Segmentation.
- Astronomical Data analysis.

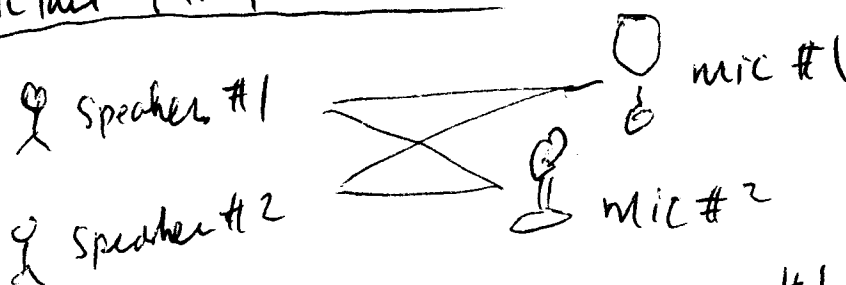
Don't know in  
advanced.

~~Let~~ algorithm

Discovers the types

clustering is only one type UNSUPERVISED LEARNING  
Algorithm.

## Cocktail Party Problem.



- Audio  
Processing.

clean up voice #1 vs #2  
mic #1 | #2

done  
line of  
code

## Cocktail party Problem Algorithm

$$[W, sv] = \text{svd}((\text{ repmat}(\text{sum}(X, 1), \text{size}(X, 2), 1) \cdot X)' \cdot X', 1);$$

one line -

Octiv + Matlab  $\rightarrow$  linear algebra prob.

Source: Sam Roweis, Yair Weiss +

Eero Simoncelli

vs.  
if you do this in Java or C++ it  
will require many lines of code.

Octiv is faster for learning

Octiv - to prototype  
then use C++/JAVA to code.