

# Multi View Learning and Paraphrasing

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What are the Multiple Views ?

# Bilingual Data

W	X	Y		$\omega$	$\xi$	$\gamma$
A	B	C		$\alpha$	$\beta$	$\gamma$

**Table:** English Greek Sentence aligned corpus with two sentences. Y and C are synonyms since they translate to the same word  $\gamma$

	$\alpha$	$\beta$	$\gamma$	$\omega$	$\xi$
A	2	1	1	0	0
B	1	2	1	0	0
C	1	1	2	0	0
W	0	0	1	2	1
X	0	0	1	1	2
Y	0	0	2	1	1

**Table:** English-Greek context vectors. This can be considered a “view” of the data. Lets call it biligual view.

Note that



# Monolingual Data

A B  
A W X  
A X Y  
W B C Y

Table: Monolingual English Corpus

	A	B	C	W	X	Y
A	3	1	0	1	1	0
B	-	2	1	1	0	1
C	-	-	1	1	0	1
W	-	-	-	2	1	1
X	-	-	-	-	2	1
Y	-	-	-	-	-	2

Table: English-Greek context vectors. This can be considered a “view” of the data. Lets call it biligual view.

	A	B	C	W	X	Y
A	6	5	5	1	1	2
B	5	6	5	1	1	2
C	5	5	6	2	2	4
W	1	1	2	6	5	5
X	1	1	2	5	6	5
Y	2	2	4	5	5	6

**Table:** English-Greek context vectors. This can be considered a “view” of the data. Lets call it biligual view.

# Combining The Two Matrices

## PPDB

Filter  $B \times B'$  by  $M$

$B * B'$  provides recall and  $M$  provides precision.

## Multiview approach : using CCA

Multiview encompasses large number of techniques.

CCA is one of them.