

ML Week

Images

Jeff Abrahamson

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Signal processing

in 2 or 3 dimensions

Images

Details that can matter:

- Illumination
- White balance
- Resolution
- Camera settings (e.g., depth of field)
- Sensor noise
- Compression technology

Images

Challenges:

- Segmentation
- Area of interest detection
- Perspective shifting

Images

Applications:

- Agriculture: fruit ripening, automated harvesting
- Security: detecting specific people
- Security: detecting accidents (e.g., falls)
- Art: counterfeit detection
- Medicine: assisted surgery
- Image search

Images

Image search (at first):

- Texture
- Colour
- Shape, simple objects



Eddie Bell @ Lyst



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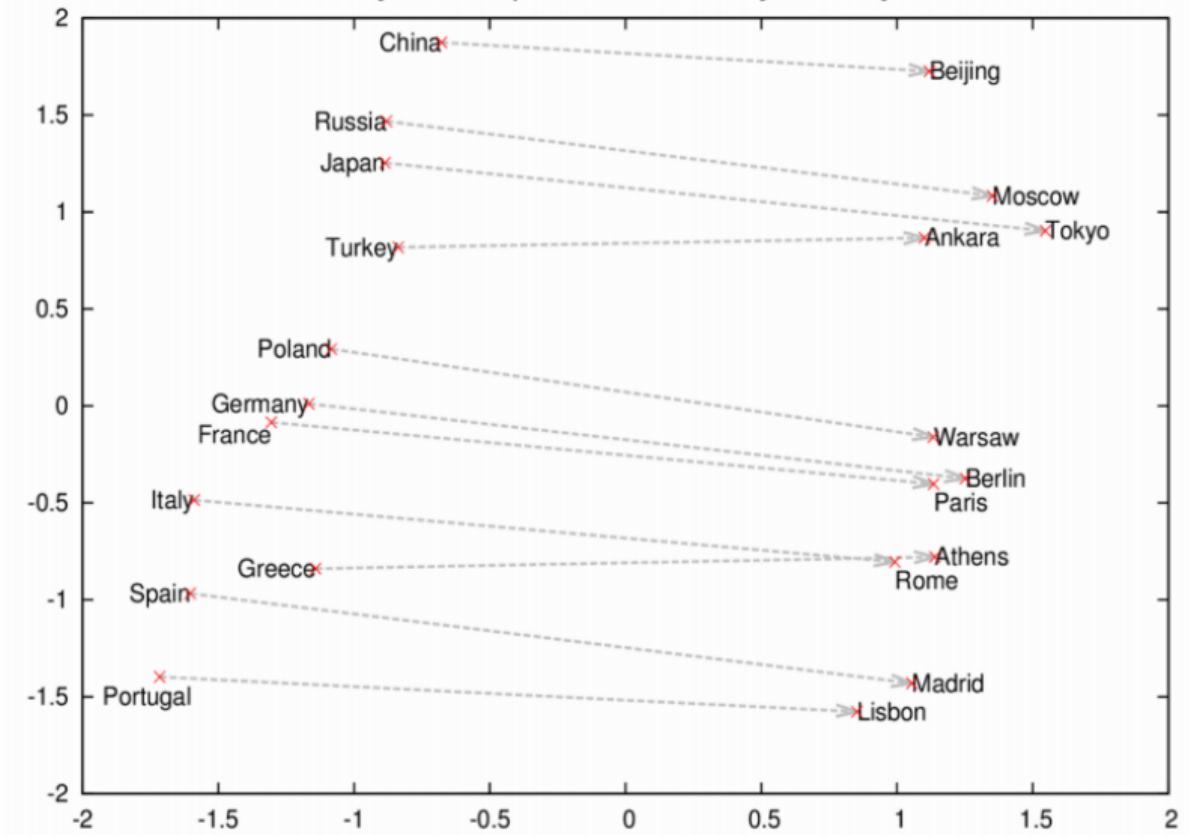
-1	0	+1
-2	0	+2
-1	0	+1



-1	-2	-1
0	0	0
+1	+2	+1



Country and Capital Vectors Projected by PCA



Term	Similarity	
	"shift"	0.933104
	"gown"	0.887743
	"skirt"	0.881672
	"bandage"	0.880162
	"midi"	0.869786

Similar to 'dress'



a group of young girls standing next
to each other on the beach



A clock tower with a clock on top of it

Google?



A bunch of bananas hanging from a tree

Google?

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TITUS ANDRONICUS
Number of **36** | 50% Network density



ROMEO AND JULIET
Number of **41** | 37% Network density



JULIUS CAESAR
Number of **46** | 34% Network density



HAMLET
Number of **37** | 39% Network density

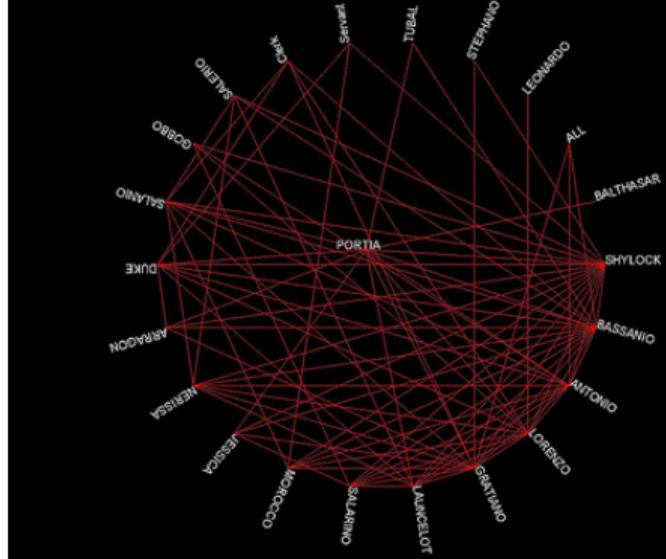


TROILUS AND CRESSIDA
Number of **35** | 40% Network density



OTHELLO
Number of **24** | 55% Network density

Merchant of Venice : diagram showing who speaks to who (most connected in the middle)
Public Domain - <http://www.pgogy.com/bill/>



Friar Laurence: *No leisure required.*
 Friar: And I am nothing else to start his horse.
 Friar Laurence: *Unknown is the course, I like it not.*

And therefore have I little talked of love.

Friar Laurence: *Look, sir, here comes the lady towards my cell.*

Friar: *Pardon me, my lady and my wife.*
How now, my lady, where comest thou?
 Friar: *From my round bower, where I did thee see.*
What courteous master!
 Friar Laurence: *That's a curious text.*

Friar: *Come to make confession to the father.*
To a saint that I should confess you,
 Friar: *Be not sorry to hear that you have me.*
And confesse to you your thoughts,
 Friar: *For all I have seen, that you have hit.*
Being square behind your back, stand to your fate.
 Friar: *For such thy back is crooked shouldst thou have.*
The tears have got small victory by that,
 Friar: *How angry is man that bears all that again.*
And what I say, I say it to thy face,
 Friar: *Thou knowest well, and thou hast deserved it.*
Or shall I come to you at evening mass.
 Friar Laurence: *My leisure serves me, gentle daughter, now.*
 Friar: *Juliet, on Thursday early will I rouse ye.*
Put hope, putchee, puthelp.

I hear thou must, and nothing may prorogue it.

**Tell me not, friar, that thou
hear'st of this.**

Friar Laurence: *Thou hast the strength of will to slay thyself.*

My dreams presage some joyful news at hand.

Reverent: *Her body sleeps in Capels' monument.*

I will hence to-night.
I do beseech you, sir, have patience.
Tush, thou art deceived.

No import he.

get thee gone.

Who calls me here?

That the life-weary taker may fall dead.

But Mardon's here.

famine is in thy cheeks.

No answer but can not be given.
Thy presence, mardon my self.

Put this in any liquid thing you will.

There is thy gold, worse poison to men's souls.

Questions?

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