Recommending articles from arXiv.org

By Tim Dwyer

Pre-prints
vs.
Journals
Articles

An email from yesterday

Paper proving our conjecture

Inbox x

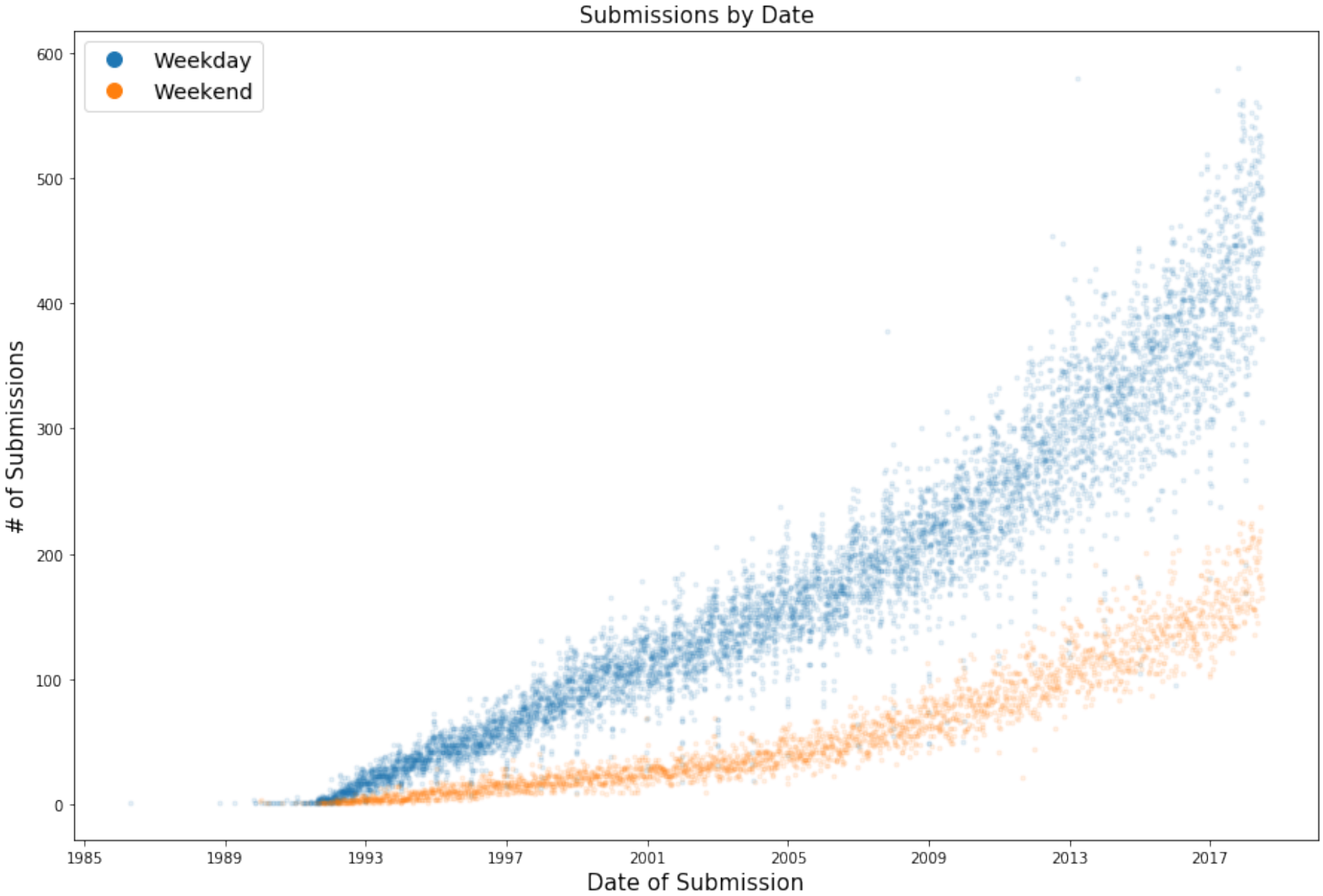
Sergi Elizalde

to me

Tim,
Have you seen this?
https://arxiv.org/abs/1807.04921

I'm organizing FPSAC so won't be able to read it until next week.

Submissions To arXiv

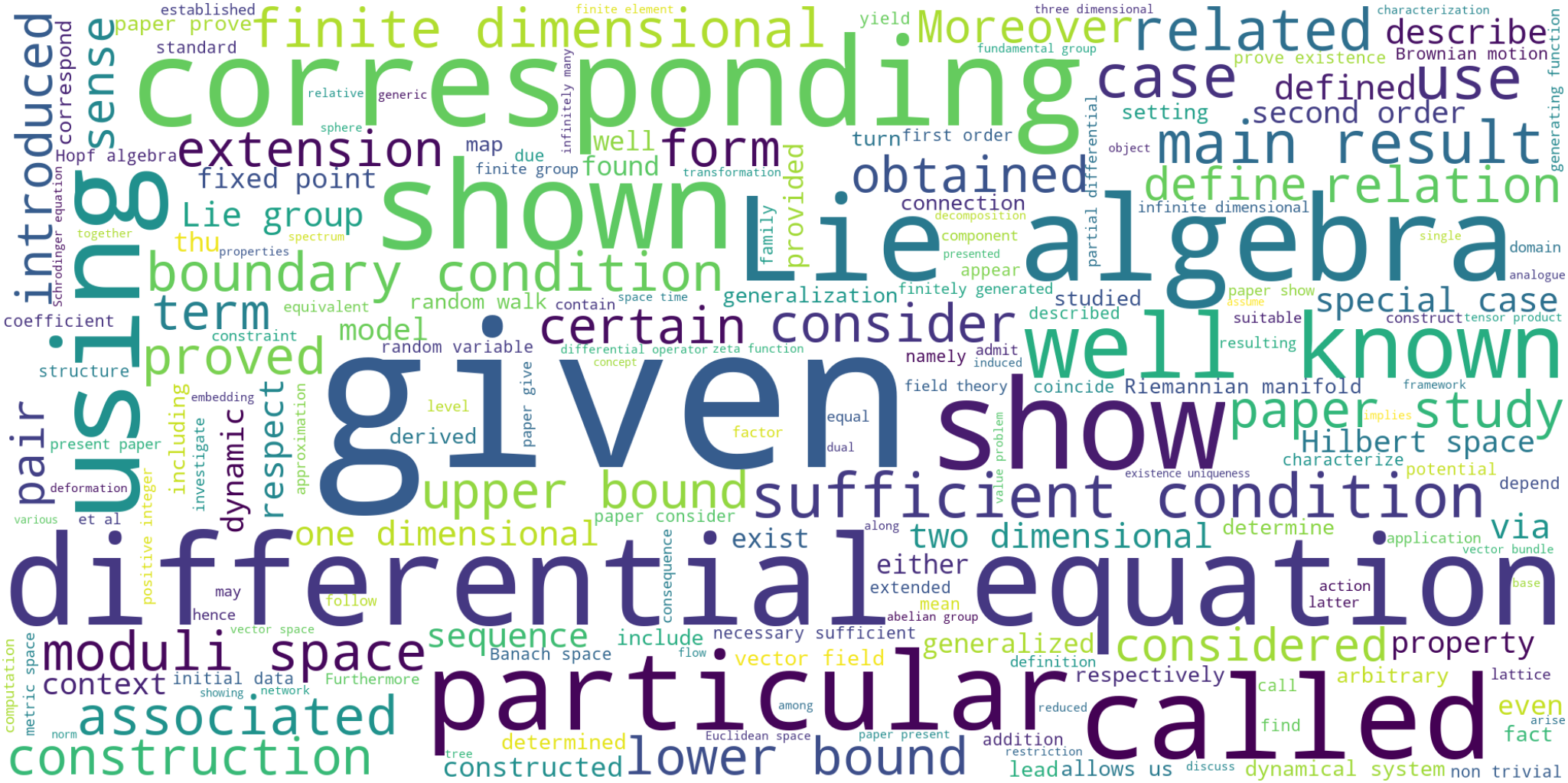

Submissions by Date
Weekday
Weekend
600
500
400
300
200
100
0
# of Submissions
1985
1989
1993
1997
2001
2005
2009
2013
2017
Date of Submission

Categories

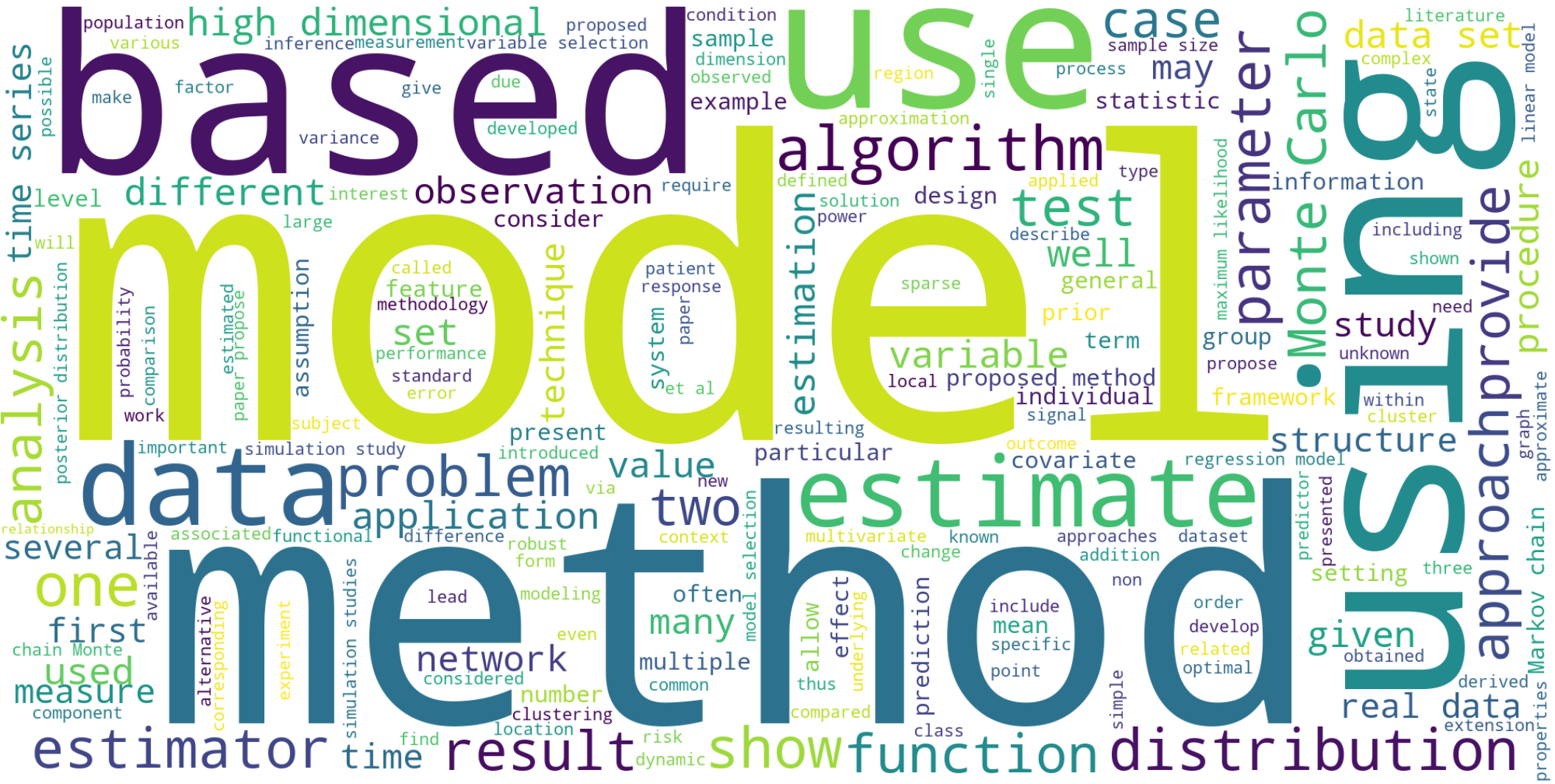
Category id	Category Name	Number of submissions
math	Mathematics	332,149
physics:astro-ph	Astrophysics	237,810
physics:cond-mat	Condensed Matter Physics	236,188
cs	Computer Science	171,952
physics:hep-ph	High Energy Physics: Phenomenology	90,017
physics:physics	Assorted topics	74,998
physics:hep-th	High Energy Physics: Theory	51,589
physics:quant-ph	Quantum Physics	46,140

Word Clouds

Math Word Cloud



Statistics Word Cloud



Rating similarity of articles

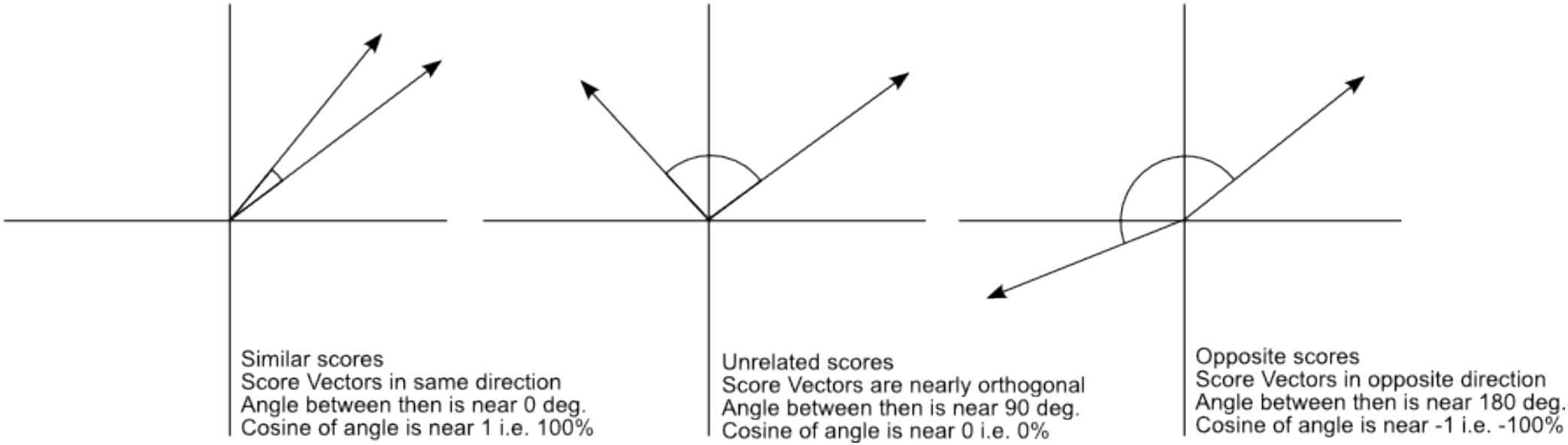
Word Vector Embeddings

How to represent text documents numerically?

- Word counts
- Term frequency-inverse document frequency
- FastText
- Word2Vec
- GloVe

Similarity of Vectors

Scoring the similarity of two articles



Source: http://blog.christianperone.com/wp-content/uploads/2013/09/cosinesimilarityfq1.png

Recommendations

Recommendations for Random Article

Bounds on the Probability of Success of Postselected Non-linear Sign Shifts Implemented with Linear Optics	Similarity Score
Feed-forward and its role in conditional linear optical quantum dynamics	0.908993
An efficient quantum filter for multiphoton states	0.894806
Minimum-energy pulses for quantum logic cannot be shared	0.891376
Linear optics implementation of general two-photon projective measurement	0.888474
Optimal Signal-to-Quantum Noise Ratio for Nonclassical Number States	0.887291

Recommendations for an Article

Wilf equivalence relations for consecutive patterns	Similarity Score
On Pattern Avoiding Alternating Permutations	0.969944
Egge triples and unbalanced Wilf-equivalence	0.967506
The Length of the Longest Common Subsequence of Two Independent Mallows Permutations	0.963155
Quadrant marked mesh patterns in 123-avoiding permutations	0.961701
Avoidance of Partially Ordered Generalized Patterns of the form k-σ-k	0.961022

Bad recommendations

The Goulden-Jackson Cluster Method: Extensions, Applications and Implementations	Similarity Score
The Number of Same-Sex Marriages in a Perfectly Bisexual Population is Asymptotically Normal	0.847961
Schwerdtfeger-Fillmore-Springer-Cnops Construction Implemented in GiNaC	0.820467
Balls in Boxes: Variations on a Theme of Warren Ewens and Herbert Wilf	0.818694
Automatic Enumeration of Generalized Menage Numbers	0.814763
The Fedosov *-product in Mathematica	0.803516

Future Work

Future Plans

- **Simple website for requesting recommendations**
- **Get some outside mathematicians, physicists etc. to try it out and evaluate it.**
- **Update Database**