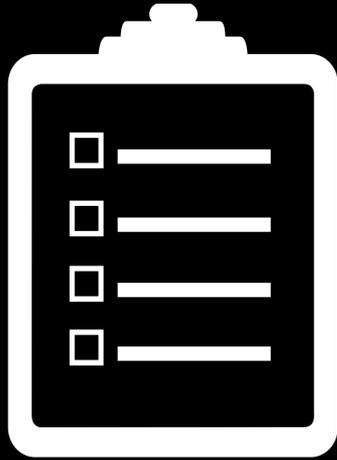


# Author Mystery

Ali Malik

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# Game Plan



Recap

Algorithm Description

Code!

Recap

# Algorithms

The STL contains pre written algorithms that operate on **iterators**.

Doing so lets them work on **many** types of containers.

Uses determined by types of iterators.

Rely heavily on **templates**.

# Iterator Adaptors

Sometimes we need to form “weird” iterators:

- Iterating over `streams` would be pretty cool
- Having an iterator that could “insert” into a collection would be pretty cool

This is where iterator adaptors come in.

# `std::ostream_iterator`

Here's a cool application of this. This code prints the vector:

```
std::vector<int> v{3, 1, 4, 1, 5};  
std::copy(v.begin(), v.end(),  
          std::ostream_iterator<int>(cout, ", "))
```

# Insert Iterators

Now we can solve the coyote problem:

```
vector<int> v {561, 1105, 1729, 2465};  
vector<int> vCopy;  
  
std::copy(v.begin(), v.end(),  
          std::back_inserter(vCopy));
```

Today

T H E  
FEDERALIST:

A COLLECTION OF  
E S S A Y S,

WRITTEN IN FAVOUR OF THE  
NEW CONSTITUTION,

AS AGREED UPON BY THE  
FEDERAL CONVENTION,

SEPTEMBER 17, 1787.

—♦♦♦—  
IN TWO VOLUMES.  
VOL. I.

—♦♦♦—  
  
NEW-YORK:  
PRINTED AND SOLD BY JOHN TIEBOUT,  
No. 358 PEARL-STREET.

1799. *m. Madison*

THE  
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*This work will be printed on a fine Paper  
and good Type, in one handsome Volume duo-  
decimo, and delivered to subscribers at the  
moderate price of one dollar. A few copies  
will be printed on superfine royal writing pa-  
per, price ten shillings.*

*No money required till delivery.*

*To render this work more complete, will be  
added, without any additional expence,*

**PHILO-PUBLIUS,**

AND THE

*Articles of the Convention,*

*As agreed upon at Philadelphia, Septem-  
ber 17th, 1787.*

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NEW-YORK:  
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The FÆDERALIST, No. 10.

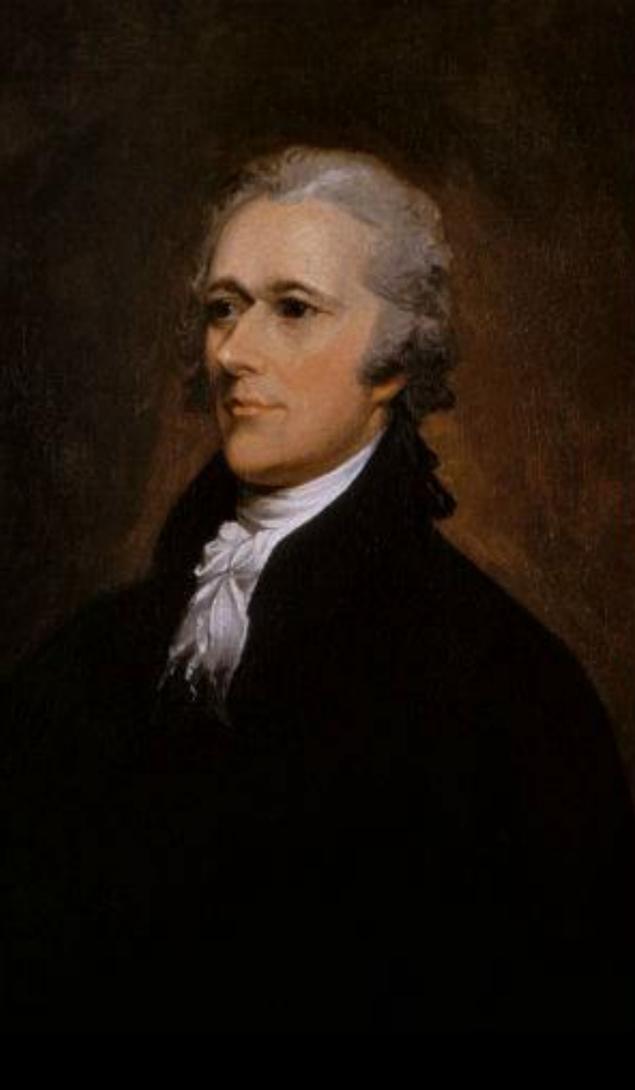
*To the People of the State of New-York.*

**A**MONG the numerous advantages promised by a well constructed Union, none deserves to be more accurately developed than its tendency to break and control the violence of faction. The friend of popular governments, never finds himself so much alarmed for their character and fate, as when he contemplates their propensity to this dangerous vice. He will not fail therefore to set a due value on any plan which, without violating the principles to which he is attached, provides a proper cure for it. The instability, injustice and confusion introduced into the public councils, have in truth been the mortal diseases under which popular governments have every where perished; as they continue to be the favorite and fruitful topics from which the adversaries to liberty derive their most specious declamations. The valuable improvements made by the American Constitutions on the popular

The influence of factious leaders may kindle a flame within their particular States, but will be unable to spread a general conflagration through the other States: A religious sect, may degenerate into a political faction in a part of the confederacy; but the variety of sects dispersed over the entire face of it, must secure the national Councils against any danger from that source: A rage for paper money, for an abolition of debts, for an equal division of property, or for any other improper or wicked project, will be less apt to pervade the whole body of the Union, than a particular member of it; in the same proportion as such a malady is more likely to taint a particular county or district, than an entire State.

In the extent and proper structure of the Union, therefore, we behold a republican remedy for the diseases most incident to republican Government. And according to the degree of pleasure and pride, we feel in being Republicans, ought to be our zeal in cherishing the spirit and supporting the character of Federalists.

PUBLIUS.



Can we discover an author's identity from  
their writing?

# The Idea

Authors have an underlying **writing style**.

Subconsciously writers tend to write in a **consistent** manner.

...

Could we use these tendencies as a **literary fingerprint**?

# The Idea

We need a writer **invariant**.

Function words:

- Syntactic glue of a language
- E.g. *the, I, he, she, do, from, because...*

# The Idea

Let's imagine our language only has 3 function words:

[I, the, there]

Deep into that darkness peering, long I stood  
there, wondering, fearing, doubting, dreaming  
dreams no mortal ever dared to dream before.

- Edgar Allan Poe

I first met Dean not long after my wife and I split up. I  
had just gotten over a serious illness that I won't bother  
to talk about, except that it had something to do with the  
miserably weary split-up and my feeling that everything  
there was dead.

- Jack Kerouac

# The Idea

We can create a fingerprint vector for the two texts.

[I, the, there]

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there was dead.

- Jack Kerouac

# The Idea

[I, the, there]

[ 0 , 0 , 0 ]

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# The Idea

[ I , the , there ]

[ 0 , 0 , 0 ]

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# The Idea

[ I , the , there ]

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# The Idea

[ I , the , there ]

[ 1 , 0 , 0 ]

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- Jack Kerouac

# The Idea

[I, **the**, there]

[ 1 , 0 , 0 ]

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# The Idea

[ I , the , **there** ]

[ 1 , 0 , 0 ]

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# The Idea

[I, the, there]

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# The Idea

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- Jack Kerouac

# The Idea

[I, the, there]

[ 1 , 0 , 0 ]

[ 0 , 0 , 0 ]

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# The Idea

[**I**, the, there]

[ 1 , 0 , 0 ]

[ 0 , 0 , 0 ]

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to talk about, except that it had something to do with the  
miserably weary split-up and my feeling that everything  
there was dead.

- Jack Kerouac

# The Idea

[ **I**, the, there ]

[ 1 , 0 , 0 ]

[ **0** , 0 , 0 ]

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miserably weary split-up and my feeling that everything  
there was dead.

- Jack Kerouac

# The Idea

[**I**, the, there]

[ 1 , 0 , 0 ]

[ 4 , 0 , 0 ]

Deep into that darkness peering, long I stood  
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- Jack Kerouac

# The Idea

[I, **the**, there]

[ 1 , 0 , 0 ]

[ 4 , 0 , 0 ]

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to talk about, except that it had something to do with **the**  
miserably weary split-up and my feeling that everything  
there was dead.

- Jack Kerouac

# The Idea

[ 1 , 0 , 0 ]

Deep into that darkness peering, long I stood  
there, wondering, fearing, doubting, dreaming  
dreams no mortal ever dared to dream before.

- Edgar Allan Poe

[ I , the , there ]

[ 4 , 0 , 0 ]

I first met Dean not long after my wife and I split up. I  
had just gotten over a serious illness that I won't bother  
to talk about, except that it had something to do with **the**  
miserably weary split-up and my feeling that everything  
there was dead.

- Jack Kerouac

# The Idea

[I, **the**, there]

[ 1 , 0 , 0 ]

[ 4 , 1 , 0 ]

Deep into that darkness peering, long I stood  
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there was dead.

- Jack Kerouac

# The Idea

[I, the, **there**]

[ 1 , 0 , 0 ]

[ 4 , 1 , 0 ]

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- Jack Kerouac

# The Idea

[I, the, **there**]

[ 1 , 0 , 0 ]

[ 4 , 1 , 0 ]

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- Jack Kerouac

# The Idea

[I, the, **there**]

[ 1 , 0 , 0 ]

[ 4 , 1 , 1 ]

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- Edgar Allan Poe

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- Jack Kerouac

# The Idea

[I, the, there]

[ 1 , 0 , 0 ]

[ 4 , 1 , 1 ]

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- Edgar Allan Poe

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to talk about, except that it had something to do with the  
miserably weary split-up and my feeling that everything  
there was dead.

- Jack Kerouac

# The Idea

[I, the, there]

[ 1 , 0 , 0 ]

Deep into that darkness peering, long I stood  
there, wondering, fearing, doubting, dreaming  
dreams no mortal ever dared to dream before.

- Edgar Allan Poe

[ 4 , 1 , 1 ]

I first met Dean not long after my wife and I split up. I  
had just gotten over a serious illness that I won't bother  
to talk about, except that it had something to do with the  
miserably weary split-up and my feeling that everything  
there was dead.

- Jack Kerouac

# The Idea

[ 1 , 0 , 0 ]

[ 4 , 1 , 1 ]

# The Idea

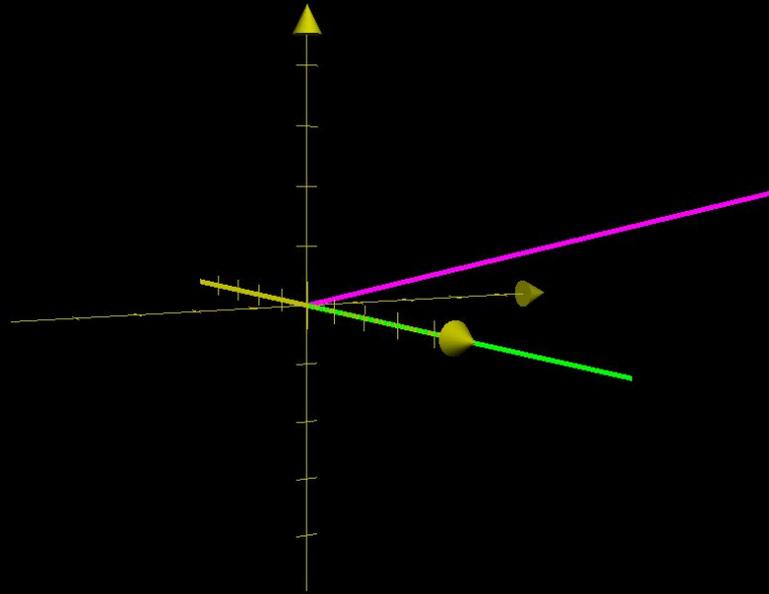
[ 1 , 0 , 0 ]

[ 4 , 1 , 1 ]

# The Idea

[ 1 , 0 , 0 ]

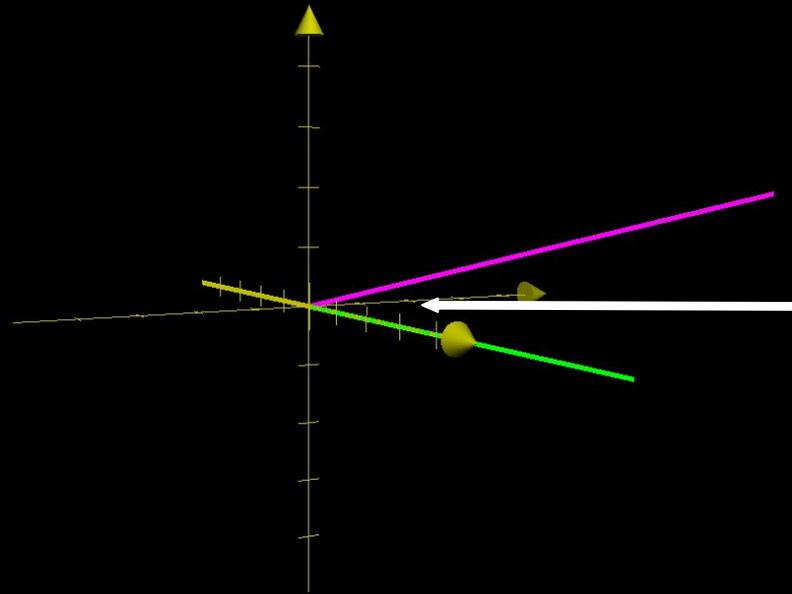
[ 4 , 1 , 1 ]



# The Idea

[ 1 , 0 , 0 ]

[ 4 , 1 , 1 ]



The closer this angle,  
the more similar the  
texts

# The Idea

$$\cos \theta = \frac{\vec{u} \cdot \vec{v}}{\|\vec{u}\| \|\vec{v}\|}$$

Let's start coding!

# Closing Notes

The code for getting the word count will be **really** useful for the first part of assignment 2.

