

Main Point 1

The concepts, **Event** and **Window** together gives a layer of abstraction that makes the algorithms useful in a wide variety of situations. Every abstraction captures the central theme and thus makes it more useful. *All manifested objects can be abstracted to the Self.*

Absolute frequencies (Pair)

Partition Rule.

The partition must just depend upon the u of the key (u, v) .

```
int getPartition(key k, int numReducers)
    return Math.abs(k.left.hashCode())% numReducers
```

Absolute frequencies (Pair)

```
int compareTo(Object O1, Object O2)
```

```
    k = compareTo(O1.left, O2.left)
```

```
    if (k != 0) return k
```

```
    return compareTo(O1.right, O2.right)
```

Pairs approach for co-occurrence matrix

```
class Mapper
```

```
    method Map(docid a, doc d)
```

```
        for all term u in record r do
```

```
            for all term v in Window(u) do
```

```
                Emit((u, v), 1) .
```

```
class Reducer
```

```
    method Reduce(Pair(u, v), Integer [c1, c2, ...])
```

```
        s = 0
```

```
        for all Integer c in [c1, c2, ...] do
```

```
            s = s + c .
```

```
        Emit((u, v), s)
```

Stripe approach for co-occurrence matrix

```
class Mapper
```

```
  method Map(docid a, doc d)
```

```
    for all term u in record r do
```

```
      H = new AssociativeArray
```

```
      for all term v in Window(u) do
```

```
         $H\{v\} = H\{v\} + 1$  .      //Tally words co-occurring with u
```

```
      Emit(u, H)
```

```
class Reducer
```

```
  method Reduce(term u, AssociativeArray [H1, H2, ...])
```

```
     $H_{\text{FINAL}} = \text{new AssociativeArray}$ 
```

```
    for all stripe H in [H1, H2, ...] do
```

```
       $H_{\text{FINAL}} = H_{\text{FINAL}} + H$       //elementwise addition
```

```
    Emit(u,  $H_{\text{FINAL}}$ )
```

Main Point 2

In order to find hidden patterns from the historical data without assuming anything or depending on theories such as probability, we can use the co-occurrence matrix. The basis of all knowledge is our ability to find and formalize patterns. *“Water the root, enjoy the fruit” is an example of the knowledge abstracted from the hidden patterns.*

CONNECTING THE PARTS OF KNOWLEDGE WITH THE WHOLENESS OF KNOWLEDGE

1. A co-occurrence matrix is a powerful tool to unearth hidden patterns.
 2. In order to be useful in a wide variety of situations, the concept of neighbor is introduced.
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3. ***Transcendental consciousness:*** *is the source of all patterns in life.*
 4. ***Impulses within the Transcendental Field:*** *It is these impulses are an abstraction of all activities.*
 5. ***Wholeness moving within itself::*** *In unity consciousness the individual functions spontaneously in an effortless manner.*

