Report

Design

Counts:

- count(F): The total number of features.
- count(F = f): The number of occurrences of a specific feature f.
- count(L): The total number of lexemes.
- count(L = l): The number of occurrences of a specific lexeme l.
- count(F = f, L = l): The number of times the specific feature f appears with the specific lexeme l.

Intro

The system consists of four parts:

1. Step01, Step02 – Preprocessing: Filter the relevant lexemes and features.
2. Step1, Step2 – Corpus Statistics: Calculate count(F = f), count(L = l), and count(F = f, L = l).
3. Step3, Step4 – Algorithm Calculation: Measure association with context and compute vector similarity.
4. Step4 – Assessment: Evaluate the model's accuracy.

Steps

- Step 01: create a LexemeSet with the all lexemes in word-relatedness.txt.
- Step 02: create a DepLabelSet with the all dependencies label in the corpus.
- Step 1: calculates count(F=f) and count(L=l) at the corpus. Used for creating lexemeFeatureToCountMap.

  Output: (Text feature/lexeme, LongWritable quantity).
- Step 2: for each lexeme presented in both the corpus and word-relatedness.txt, calculates a vector of counts(F=f,L=l). The step uses TreeMap to create a lexicographically ordered map, ensuring a consistent structure for all lexeme vectors.

Output: (Text lexeme, Text spaces_separated_counts(F=f, L=l))

- Step 3: measure association with the context and create four vectors, one for each association method.

  Output: (Text lexeme, Text v5:v6:v7:v8, vi is space separated vector.

- Step 4: using fuzzy join, for each lexemes pair, create a 24-dimensional vector that measures vector similarity (distance) using six distance measure methods. Output: (Text lexeme, Text paces_separated_vector)
- Step 5: (Not part of the MapReduce pattern) Using Weka to assess the model's accuracy.
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Communication:

- Map output records: This counter indicates the total number of key-value pairs emitted by the mappers. In your log, it shows:

  Step 01: Map output records=29094

  Step02: Map output records=617726426

  Step 1: Map output records= 85196780

  Step 2: Map output records= 71781585

  Step 3: Map output records=667

  Step 4: Map output records=506920

- Map output bytes: This counter represents the total size (in bytes) of all key-value pairs emitted by the mappers before any compression. Your log shows:

  Step 01: Map output bytes=29094

  Step02: Map output bytes=3841626296

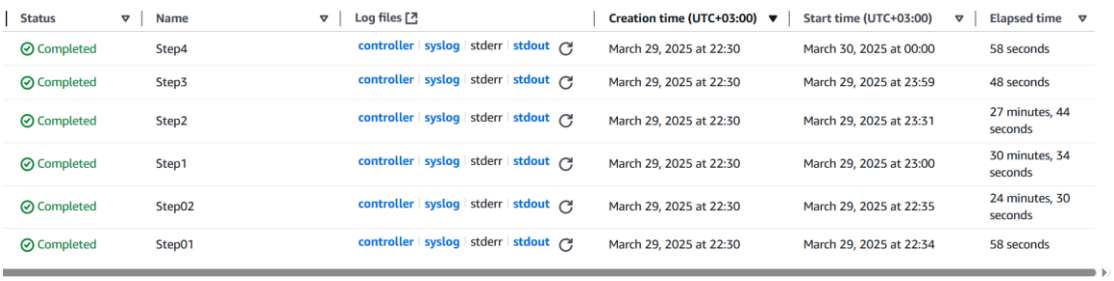
  Step 1: Map output bytes= 1364364966

  Step 2: Map output bytes= 1468179361

  Step 3: Map output bytes= 352586

  Step 4: Map output bytes=271650535

Records:



Status	Name	Log files	Creation time (UTC+03:00)	Start time (UTC+03:00)	Elapsed time
Completed	Step4	controller | syslog | stderr | stdout	March 29, 2025 at 22:30	March 30, 2025 at 00:00	58 seconds
Completed	Step3	controller | syslog | stderr | stdout	March 29, 2025 at 22:30	March 29, 2025 at 23:59	48 seconds
Completed	Step2	controller | syslog | stderr | stdout	March 29, 2025 at 22:30	March 29, 2025 at 23:31	27 minutes, 44 seconds
Completed	Step1	controller | syslog | stderr | stdout	March 29, 2025 at 22:30	March 29, 2025 at 23:00	30 minutes, 34 seconds
Completed	Step02	controller | syslog | stderr | stdout	March 29, 2025 at 22:30	March 29, 2025 at 22:35	24 minutes, 30 seconds
Completed	Step01	controller | syslog | stderr | stdout	March 29, 2025 at 22:30	March 29, 2025 at 22:34	58 seconds

10 NGRAM Files:

Class: TRUE

- Precision: 0.090
- Recall (TP Rate): 0.769
- F-Measure: 0.162

Class: FALSE

- Precision: 0.908
- Recall (TP Rate): 0.227
- F-Measure: 0.363ejmaces.com

Weighted Average:

- Precision: 0.833
- Recall (TP Rate): 0.276
- F-Measure: 0.345