

# Week 5 – Evaluation

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Model: `Word2Vec(sentences, size=200, window=5, min_count=0)`

## 1 Spearman correlation coefficient

Spearman's correlation assesses monotonic relationships (whether linear or not). If there are no repeated data values, a perfect Spearman correlation of  $+1$  or  $-1$  occurs when each of the variables is a perfect monotone function of the other.

### 1.1 Tokenized corpus

- `mc.txt`

```
SpearmanrResult(correlation=-0.2052173913043478,  
pvalue=0.3360608896745527)
```

- `rg.txt`

```
SpearmanrResult(correlation=0.11568660437726734,  
pvalue=0.4236940022808605)
```

A Spearman correlation of zero indicates that there is no tendency for  $Y$  to either increase or decrease when  $X$  increases, where  $X$  are provided similarity scores, and  $Y$  the ones the model predicts.

## 2 Pearson correlation coefficient

The Pearson correlation coefficient is a measure of the linear correlation between two variables  $X$  and  $Y$ . It has a value between  $+1$  and  $-1$ , where  $1$  is total positive linear correlation,  $0$  is no linear correlation, and  $-1$  is total negative linear correlation.

## 2.1 Tokenized corpus

- `mc.txt`  
(-0.4375989049001535, 0.03247440810481715)

- `rg.txt`  
(-0.16451404598336117, 0.2535926710213491)

A value of 0 implies that there is no linear correlation between the variables.

## 3 Discussion

Compared to the state-of-the-art performance of Pilehvar and Navigli (2015) and Resnik (1995) on RG and MC, respectively, the computed scores leave a lot to be desired. Of course, that may be due to various factors, such as the used word embeddings, or the questionable suitability of translating the words into Bulgarian while keeping the English-based scores.