Citation Intent Classification

Identifying the Intent of a Citation in scientific papers

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Task Description

- Identifying intent of a citation in scientific papers
- Three Intent categories/classes from the data set
  1. background (background information)
  2. method (use of methods/tools)
  3. result (comparing results)
- **Classification Task**
  - Assign a discrete class (intent) for each data point

Data set

- Training Data: 8.2K+ data points
  1. background - 4.8K
  2. method - 2.3K
  3. result - 1.1K
- Testing Data: 1.8K data points
  1. background - 1K
  2. method - 0.6K
  3. result - 0.2K

Approach & Architecture

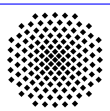
Classifier Implementation

Base Classifier: **Perceptron**

- Linear Classifier
- Binary Classifier

```
class Perceptron:
    def __init__(self, label: str, weights: dict, theta_bias: float)
    def score(self, features: list)
    def update_weights(self, features: list, learning_rate: float, penalize:
    ↪  bool, reward: bool)

class MultiClassPerceptron:
    def __init__(self, epochs: int,learning_rate: float,random_state: int)
    def fit(self, X_train: list, labels: list)
    def predict(self, X_test: list)
```




Approach & Architecture

Feature Representation

Lexicons and Regular Expressions ($\approx$ 30 Features)

- LEXICONS

  ALL_LEXICONS = {

  'INCREASE': ['increase', 'grow', 'intensify', 'build up', 'explode'],

  'USE': ['use', 'using', 'apply', 'applied', 'employ', 'make use'],

  .....

  }

- REGEX
  - *ACRONYM*
  - *CONTAINS_URL*
  - *ENDS_WITH_ETHYL*

There Is No Largest Prime Number

The proof uses reductio ad absurdum.

Theorem

There is no largest prime number.

1. Suppose p were the largest prime number.

4. But $q + 1$ is greater than 1, thus divisible by some prime number not in the first p numbers.

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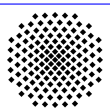


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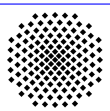
1. Suppose p were the largest prime number.
2. Let q be the product of the first p numbers.
3. Then $q + 1$ is not divisible by any of them.
4. But $q + 1$ is greater than 1, thus divisible by some prime number not in the first p numbers.

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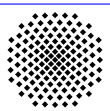


References I