compared against it's opposite, greater values are detected as five personality traits.

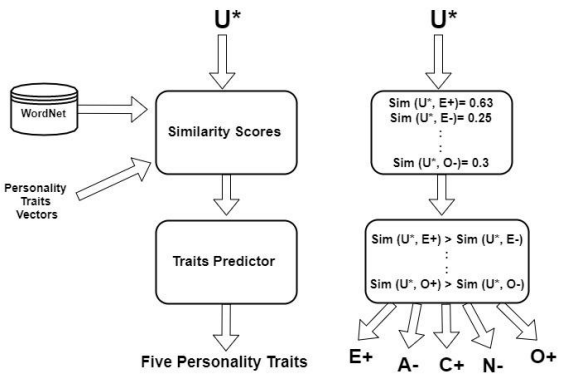

Figure 3: Illustrative example for prediction process

4 RESULTS AND DISCUSSION

4.1 Dataset description

The used dataset contains 9917 status posts for 250 Facebook users, released by the myPersonality project for the Workshop on Computational Personality Recognition [29]. The myPersonality project is a Facebook application devoted to the academic study of personality. It contains data about Facebook users who agreed to participate by giving an access to their Facebook profile, social network data as well as personality assessment test results. Our goal is to use the mentioned dataset to test the effectiveness of the approach for automatic personality assessment.

4.2 Evaluation Metrics

Three measures were used to evaluate the quality of prediction process; accuracy, precision (positive predictive value) and negative predictive value (NPV). Accuracy measure is calculated the percentage of correct predictions defined by:

$$\text{Accuracy}= \frac{Number\ of\ correct\ predictions}{Total\ number\ of\ predictios} \quad (6)$$

Besides the accuracy metric, this paper the Precision and NPV measures are also considered which are defined respectively as:

$$\text{Precision}= \frac{TP}{TP+FP} \quad (7)$$

$$\text{NPV} = \frac{TN}{TN+FN} \quad (8)$$

Where TN, TP, FP and FN mentioned refers to true negative, true positive, false positive and false negative respectively.

4.3 Experimental Results

The pre-processing step produced 7658 posts from the total post sentences, which are used for further analysis. The two semantic similarity measures lin and wup defined by equations 3 and 4are tested for similarity measurement. Prediction accuracies for each personality trait are calculated according to equation 6. Figure 4 shows a comparison between Prediction accuracies for lin and wup measures.

To evaluate the semantic-based approach performance, it was compared against supervised classification techniques. Using the same dataset, supervised classification was tested using words counts extracted from users' text. Support vector machine (SVM) and Decision tree (DT) classifiers were trained using WEKA[30] and tested using a 10 fold Cross-Validation. The comparison between the semantic based approach and mentioned classifiers is shown in table 3.

Table 3: Comparison of accuracy values (%)

	Agree.	Consc.	Extra.	Neuro.	Open.	Average
lin	55%	53.6%	55.2%	63%	72%	59.76%
wup	54.18%	53%	41.8%	62%	71.4%	56.44%
SVM	53%	56%	55%	62%	66%	58.4%
DT	53%	54%	59%	59%	64%	58.20%

As shown in table 3, the overall results show that IC measure obtained higher accuracy (59.76%) than the path based measure (56.44%). This analysis yielded nearly similar results for agreeableness, conscientiousness, neuroticism and Openness to experience. But the most significant change was in the prediction of extraversion when lin is used as relatedness score measure.

Compared to the mentioned classifiers, the proposed approach as shown in Table 3 has enhanced the prediction of Agreeableness, neuroticism and openness. While for the conscientiousness, our prediction wasn't as accurate as of the classifiers.

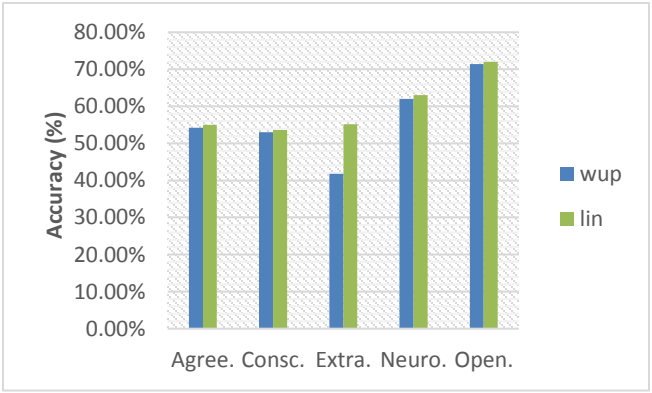

Figure 4: Accuracy of the proposed approach