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RSS Join Engine

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Plan

- **Introduction**
  - What is RSS? Problem?
- **Background research**
  - Theorical part
  - Practical part
- **Adopted solution**
  - Framework
  - Pseudo-code
- **Test hypothesis**
  - Time of response
  - Precision
- **Conclusion**

Introduction

- What is RSS?
- Problem statement
  - Waste of time for the users.
  - Too much information.
- RSS Join Engine

Background research

- Divided into 2 parts: theatrical and practical.
- **Theorical part:**
  - Several types of relations between feeds:
    - Disjointness
    - Inclusion
    - Intersection
    - Equality
    - Oppositness
  - Semantic relatedness: **2 main concepts**:

    1. String, word and text similarity [1]:

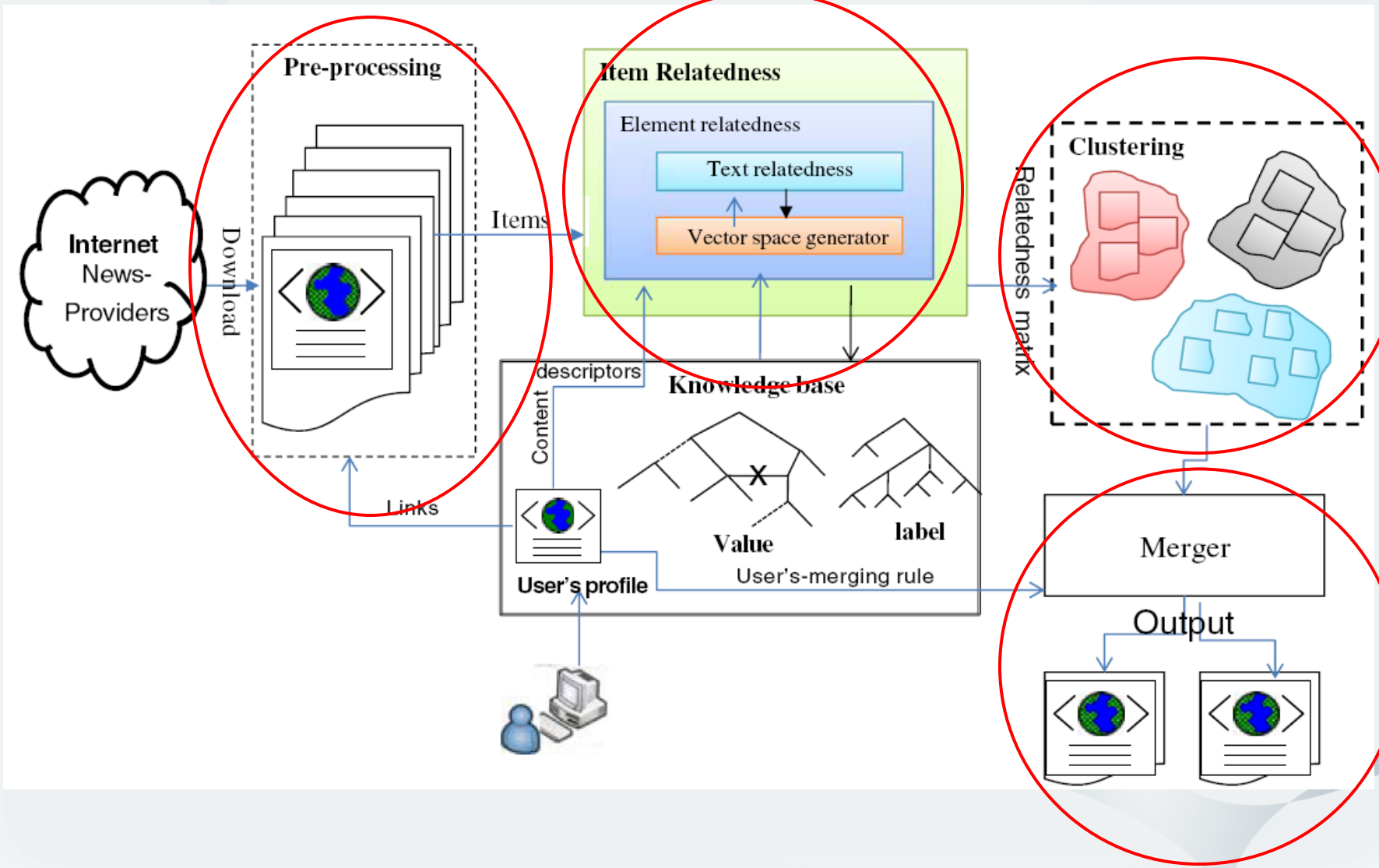
    a. String similarity: Works on shape/syntax of the sentence.

    b. Word similarity: Word-to-word similarity metrics (Distance oriented measure, Knwoledge based, corpus based).

    c. Text similarity: Similarity of the common words in a text placed in order.

Background research

2. RSS merger framework – 4 modules [2]:



Background research

- Data streams management [3].
- Sliding-window concept: 2 types of windows:

1. Count-based: Contains the last T items.
2. Time-based: Contains the items that arrived in the last t time units.

- Possible strategies:

1. Eager re-evaluation: Generates new results after each new tuple.
2. Lazy re-evaluation: Re-executes the query periodically.

Testing tuples: $\forall u \in S1 \text{ and } k.ts - T1 \leq u.ts \leq k.ts$

Background research

- **Practical part**
  - XML comparators (BeyondCompare, ExamDiff …)
  - RSS Aggregators (Feed reader, RSS bandit…) [4]
  - RSS Merger [2]

    a. Measures relatedness between news items (+stemming and generating vectors)

    b. Clusters the RSS items based on the relatedness.

    c. Merges the news based on the users rules.

Adopted solution

RSS Join engine based on the XML comparators technique, RSS aggregators and RSS merger:

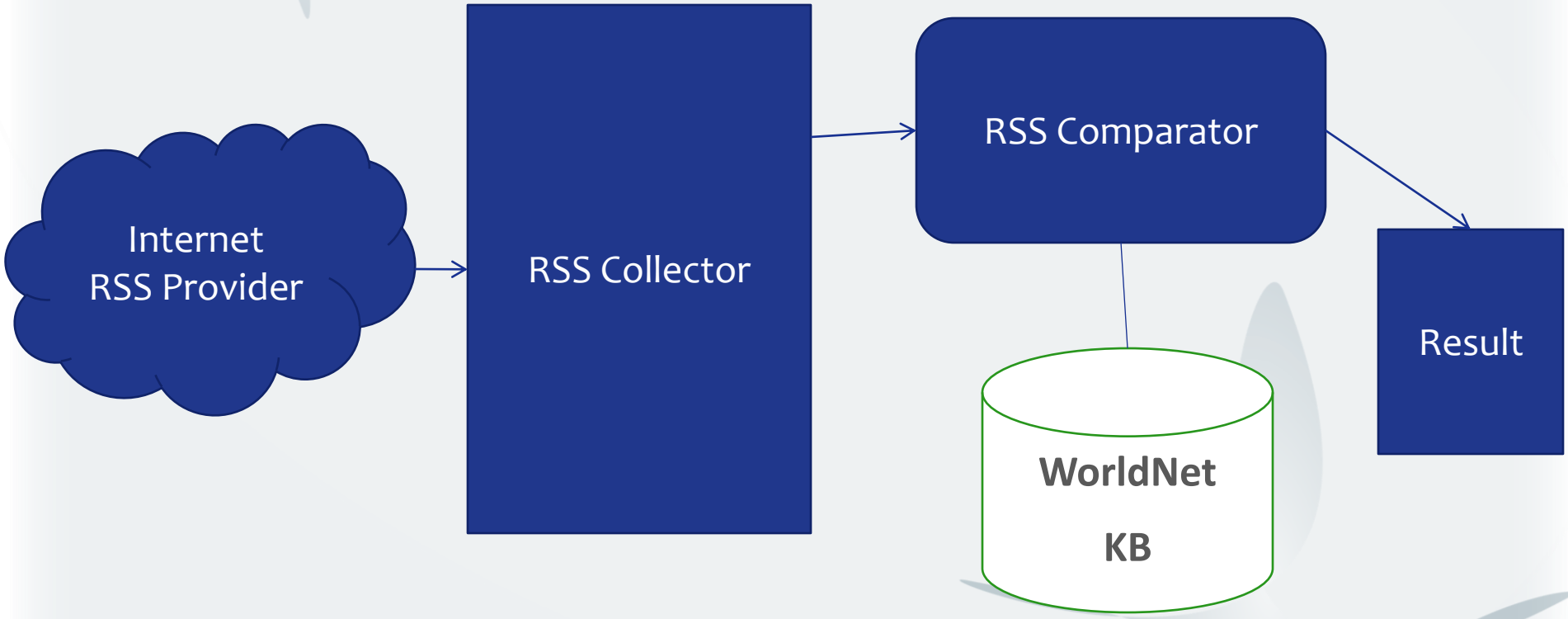


Figure 1 – RSS Join Engine Framework

Adopted solution – Pseudo code

```
function GetRSS()
        Check(URL)
        if(Check)
                Connect(URL)
                Collect(RSS)
        else
                "Display Error Message"
        end If
end function
function Comp(title1,title2)
        Open an instance on WorldNet Knowledge Base
        Compare each title with the other one using semantic
relatedness measures (xSim,… )
return the Comparison as type (intersection, disjointness or
equality)
end function
```

Adopted solution – Pseudo code

```
function JoinRSS()
        Comp(title1,title2)
        If Comp = Disjointness then
                Show both titles
        end If
        If Comp = Equality then
                Show one of the titles
        end If
        If Comp = Intersection then
                If one of the titles is totally included in another (Inclusion) then
                        Show the title including the other title
                else If one of the titles is intersecting with another but the
content is referring to opposite meaning (Oppositeness) then
                        Show both titles
                else
                        Show the intersection of one of the titles
        end If
end function
```

Test hypothesis

Time of response

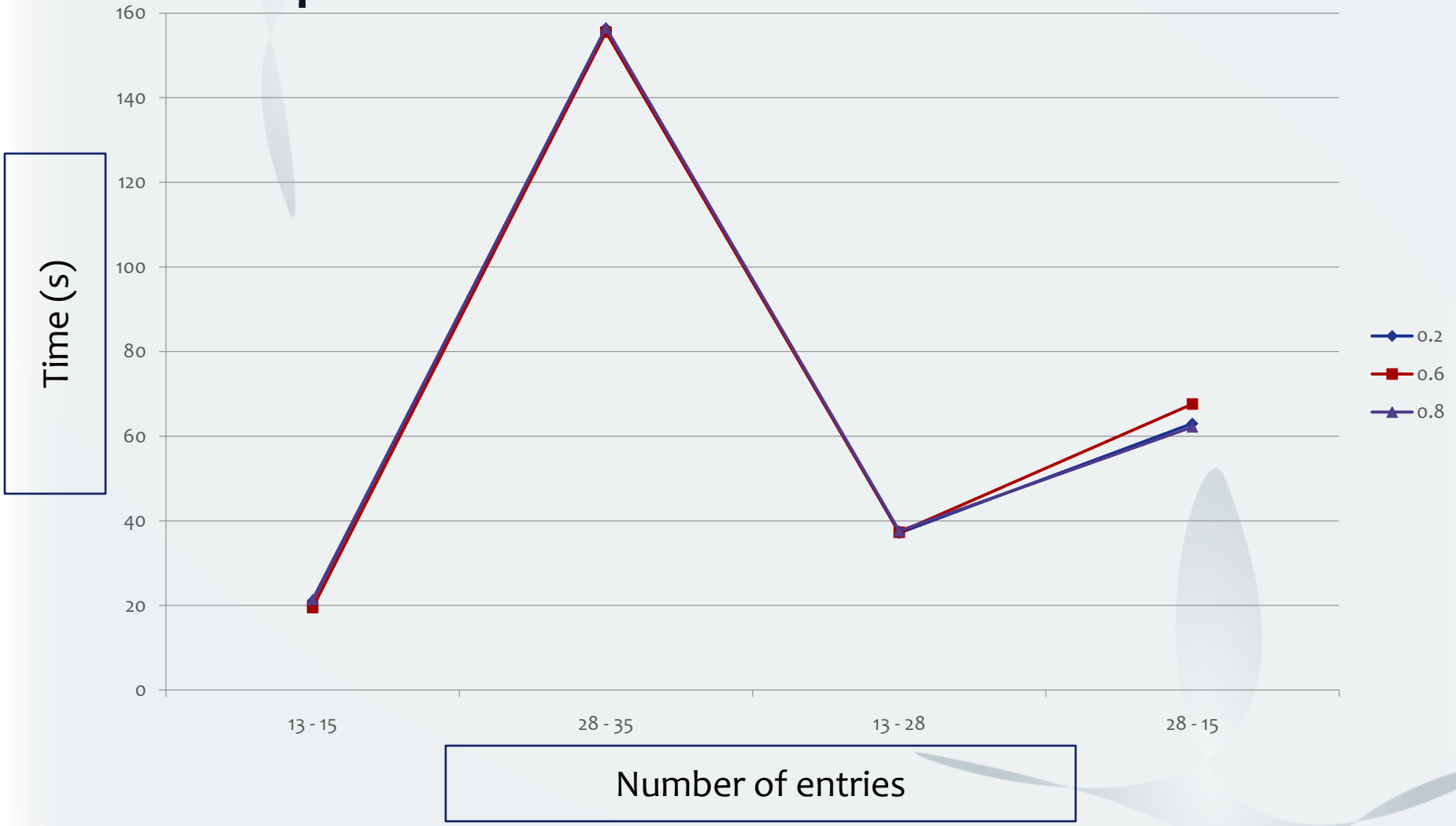


Figure 2- Time of response chart

Test hypethesis

Precision

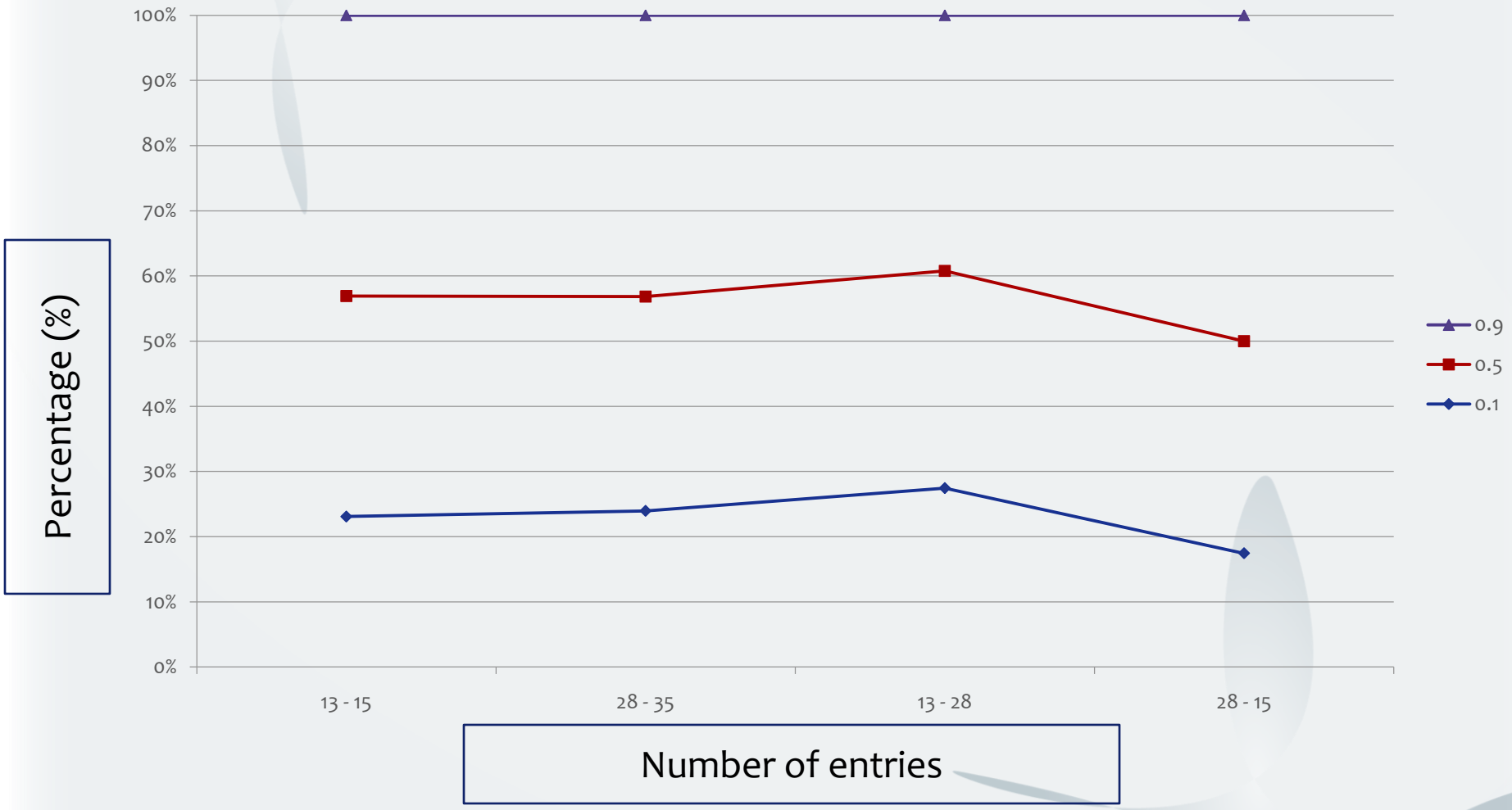


Figure 3 – Precision chart

Conclusion

- We calculated the semantic relatedness between RSS to obtain one of the five item relations.
- Figure 2 shows that no matter what was the threshold value, the time of response is identical which is abnormal because it should vary with the threshold value proportionally.
- Figure 3 shows a big success for the precision, that's because while using per example 0.9 as threshold value we obtained ~100% as result.
- As a closure for this study, we still need to find a solution to reduce the time of response in order to make it acceptable w.r.t human scale, and extend the join process to cover the description and other elements of the RSS feeds; these ideas and issues will be discussed in our next paper.

References

- [1] Islam, A., Inkpen, D., Semantic text similarity using corpus-based word similarity and string similarity, ACM Transactions on Knowledge Discovery from Data (TKDD), v.2 n.2, p.1-25, (2008)
- [2] Getahun, F., Tekli, J., Chbeir, R., Viviani, M., Yetongnon, K., Semantic-based Merging of RSS Items, WWW: Internet and Web Information Systems Journal Special Issue: Human-Centered Web Science, Springer Netherlands, Vol. 12 (No. 11280) (2009)
- [3] Golab, L., Özsu, M., Processing sliding window multi-joins in continuous queries over data streams, Proceedings of the 29th international conference on Very large data bases, p.500-511, Berlin, Germany (2003)
- [4] A directory of RSS Aggregators. http://www.aggcompare.com

Any Questions