ANCHOR-FLOOD: RESULTS FOR OAEI-2009

Md. Hanif Seddiqui and Masaki Aono
Knowledge Data Engineering Laboratory
Toyohashi University of Technology, Japan
Our Contents

- Anchor-Flood for Ontology Alignment
  - Benchmarks
  - Anatomy
  - Conference
  - Directory
- Instance Matching
  - IIMB Benchmarks
Our Contents

- Anchor-Flood for Ontology Alignment
- Instance Matching
Ontology Alignment: An Example

Aligning TWO Ontologies? 
Now with Anchors?

NxM comparisons 
In Brute-Force

Ontology A

Ontology B

pig
animal
mouse
fish
OUR ONTOLOGY ALIGNMENT TECHNIQUE

Anchor-Flood works faster !!
ANCHOR-FLood Algorithm

Primary Anchor \((e, f)\)

Anchor Left?

Aligned?

Collect 2 Blocks of Neighbors

Measure Similarity
**FINDINGS**

- **Block Size vs. Elapsed Time**
  - Two depth children from anchor-concept $c$ + one depth children from $parents(c)$ + one depth children from $grandparents(c)$ on anatomy track
    - Elapsed time approx. 15 sec.
    - Decreasing recall
    - Good precision

- Two depth children from anchor-concept $c$ + two depth children from $parents(c)$ + one depth children from $grandparents(c)$ on anatomy track
  - Elapsed time approx. 4 min.
  - Increase recall
  - Decrease precision
Our Contents

- Anchor-Flood for Ontology Alignment
- Instance Matching
Semantic Link Cloud: Our Uniqueness

Resource

Audio Album

Title

MultimediaContent

Time

Creation

Creator

Blackout

hasTitle

Blackout

hasCreationDate

Nov, 2007

hasCreationLocation

USA

hasCreator

Britney Spears

An instance is defined as a part of knowledge that includes concepts, proper types, other instances to specify its meaning. We call this as a 'Semantic Link Cloud'
Instance Matching Algorithm
INSTANCE MATCHER

Algorithm InstanceMatch (ABox $ab_1$, ABox $ab_2$, Alignment $A$)
1. for each $ins_i \in ab_1$
2. $\text{cloud}_i = \text{makeCloud}(ins_i, ab_1)$
3. for each $ins_j \in ab_2$
4. $\text{cloud}_j = \text{makeCloud}(ins_j, ab_2)$
5. if $\exists a(c_1, c_2) \in A \mid (c_1 \in \text{Block}(\text{ins}_2, \text{type}) \land c_2 \in \text{Block}(\text{ins}_1, \text{type}))$
6. if $\text{Sim}_{\text{struct}}(\text{cloud}_i, \text{cloud}_j) \geq \delta$
7. $i\text{match} = i\text{match} \cup \text{makeAlign}(ins_i, ins_j)$
RESULTS

- Please visit OAEI-2009 website for the detail results of *aflood*, stands for Anchor-Flood
CONCLUSIONS AND FUTURE WORK

- Anchor-Flood algorithm run faster due to its unique way of divide and conquer.
- For Instance Matching, we used Semantic links associated to each of the Instances.

Future Work

- To consider Semantic Similarity among concepts of a taxonomy to reduce the size of block and hence to decrease the runtime and to increase the efficiency.
- Improve the runtime of Instance Matching.

You can download our system through-


THANK YOU
CHALLENGES

- Varying Block Size
  - Increase block size by the neighbors of sufficient depth
  - Decrease block size by considering semantic similarity
- Varying threshold