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Page 4 :
I totally agree on the fact that using $u_^+\phi + u_^-+\phi$ as the sample size is more adequate in an open-world context than using u_ϕ. But this is not what is done in the article. Actually, it seems like this problem is addressed in the experiment by using an identical u_ϕ for each axiom ϕ to be evaluated. This is only made possible by using *content*(\phi) instead of *content*(\phi | B) as the set of consequence to be evaluated (see page 9), and by considering exclusively axioms of the for subClassOf(*C*,*D*). Otherwise, u_ϕ would vary with ϕ.

Page 5 : Pairs of statements *C(a)* - *D(a)* and *C(a)* - *E(a)* and are respectively given as an example and a counterexample for the axiom *subClassOf*(*C*,*D*), provided *disjointClasses(C,E)* is in the ontology for the second one.
Two questions here :

- I assume there is a typo for the disjointness : *disjointClasses(D,E)* instead of *disjointClasses(C,E).* Otherwise the base would simply be inconsistent. This is also coherent with the given SPARQL query patterns.
- The notion of a counterexample seems to be understood on a strict logical basis : *C(a)* - *E(a)* is a counterexample because $\neg E(a)$ could be inferred. But the notion of an example seems stronger : on a strict logical basis, one could arguably say that *C(a)* alone is an example as well, or even F(a), D(b), …

Page 5, same paragraph : I agree on the intuition that some statements (like *Mammal(a))* are unlikely to be found in a real dataset. But what is unclear to me is the reason why statements involving more common concepts (e.g. *Dog(a)*) cannot be used as examples or counterexamples for axioms which involve rarer concepts.
For instance, according to the authors, the pair *Basset(a)* - *Mammal(a)* would be an example for the axiom subClassOf(*Basset*,*Mammal*). Assume now that subClassOf(*Dog*, *Mammal*) is also in the ontology. Then the pair *Basset(a)* - *Dog(a)* may actually also be viewed as an example for subClassOf(*Basset*,*Mammal*), given that *Mammal(a)* can be inferred from *Dog(a)* together with subClassOf(*Dog*, *Mammal*).
The same holds for counterexamples.

Page 7, first paragraph : an error in in the DL transcription : the formula $\top \sqsubseteq Raven \sqcap \neg Black$ does not mean “there are ravens that are not black”, but “everything is a non black raven”.
In order to express “there are ravens that are not black”, one can use an Abox statement : $\neg Black \sqcap Raven(a)$.

Page 7 , first paragraph :
The text states that “evidence of a black raven selectively confirms the hypothesis $Raven \sqsubseteq Black$ because it fails to confirm its negation ”. This is not sufficient : evidence of a green apple also fails to confirm the negation of $Raven \sqsubseteq Black$, but it does not selectively confirm $Raven \sqsubseteq Black$.
If I understand correctly (which I am not certain of), the sentence could be rewritten as “evidence of a black raven selectively confirms the hypothesis $Raven \sqsubseteq Black$ *because it both confirms it and fails to confirm its negation* ”.
The next sentence seems logically equivalent to stating that evidence of a green apple does not confirm either $Raven \sqsubseteq Black$ nor its negation. It may be easier to understand that way,

in the continuation of the previous sentence, instead of using the notion of *contradiction.*

page 9, definition 12 : use |content(\phi)| instead of ||content(\phi)|| (single vertical bar)

page 9 : I cannot see where *content(*\phi | B) is used elsewhere in the article. Which may indeed be very interesting, considering it would allow for additional consequences to be derived, because *content*(\phi) \subseteq *content*(\phi | B).
For instance, back to the previous example, one would have to test the consequence
Basset(a) \Rightarrow Dog(a)

page 11 : equations 16 and 17 seem unnecessary.

General :

- I cannot see why the possibilistic approach followed here is an answer to the limitations of the probabilistic approach described page 5.
  If I understand correctly, the lack of explicit support for concepts like *Mammal* might be an issue for both approaches. The way this precise problem is addressed seems to be conditions 5 and 6 page 9. But a similar effect could be obtained in a probabilistic setting, taking for instance log(u^+_\phi) and log(u^-_\phi) as the respective numbers of success and failures, and log(u^-_\phi) + log(u^+_\phi) as the sample size.

- Some versions of DBPedia have been partially closed deductively, following the rule
  $C \sqsubseteq D, C(a) \vdash D(a)$. Is it the case for the dump being used in this article ?

  If this is the case, I would personally opt either for a complete classification (with a reasoner) of the individuals considered, or a deletion of statements which are likely to have been automatically inferred.