Grade: 3 out of 3 for an informative report

Team FRMA - OE10 Report

We made a lot of changes based on the feedback we from our previous work. For example, we removed our equivalence statements and just used the Uberon Ontology instead. We modified our IRIs in multiple ways, whether it be to adhere to convention (like changing `/FRMA/MLMO` to `/FRMA/MachineLearningModelOntology`) or to make things easier (like changing `fma-ind:Image/PersonName/2/Person/Face/Eye` to simply `image1:Eye`). We also added some more Uberon concepts to our ontology, along with OWL metadata such as `owl:versionIRI`, `owl:versionInfo`, and `owl:priorVersion`.

Coming from someone totally new to SPARQL querying, Jim McCusker's lecture was incredibly helpful for not only learning the more obscure examples of queries as he demonstrated but also for clarifying the basics. The readings explained the concepts of searching through triples, but having his whiteboard examples where he stepped through the table of every possible result and figured out which triples were valid results was exactly what I needed to solidify my understanding and I wholeheartedly recommend having him continue to explain SPARQL (not that I have anything to compare to). His lecture also opened the door to more complicated queries in a fashion that I definitely approve of. Rather than teaching people all about the functions in question and never covering them again, his light covering of the functions and explanation of the SPARQL docs was helpful (and explained a skill that I think is essential for everyone to learn and yet is rarely taught). Knowing about the SPARQL documentation was definitely essential when we started creating queries of our own and inevitably started running into problems.

When attempting to implement a SPARQL query for the question, “Q: What part of the face does my facial recognition model depend on the most?” we ran into problems that neither SPARQL or the Description Logic query tool could seemingly solve independently. To make a long story short, SPARQL made it simple enough to collect information about the accuracy of each occluding object type but didn’t allow for those object types to be connected to the body regions that they occlude like is needed in the question. Meanwhile, the description logic allows for individual `WearableThings` to be selected based on what body region they are occluding, but not to easily collate the accuracy data of those individuals. We attempted to solve this issue by using SPARQL construct to essentially build in the relationships within the ontology into the raw data but this both seemed like needlessly duplicating our ontology in a worse location and seemed like the wrong solution for a potential real world application. Also, none of our tools allowed for subquerying over the constructed rdf. We eventually decided that an outside decision logic reasoner could trivially take in the results of the SPARQL query and return the racial regions being occluded by reading the owl files and showed this to be possible in the protege dl query tool.

Moving forward, we intend to update our mugshot inferencing scripts (queries?) to include more classes from the Image Ontology, such as “Outdoors Image”. We will also need to provision infrastructure to run the Facenet and Dlib facial recognition algorithms, and develop processes to load the results of those algorithms into the FRMA system. Lastly, the mix of using GitHub, Google Drive, Tetherless World Drupal, and a cloud server for Blazegraph is proving to introduce additional problems of organization - we’ve discussed

the possibility of procuring a domain name to host our work and associated system in perpetuity.