Semantic Web

Tutorial 8
OWL elements and the Pizza ontology

Common Problems

picture by: http://www.flickr.com/photos/bala_/
OWL elements and the Pizza ontology
The Pizza ontology

Available at http://www.co-ode.org/ontologies/pizza/

Used ontology:
http://www.co-ode.org/ontologies/pizza/2005/10/18/pizza.owl
Class

Pizza, NamedPizza, QuattroFormaggie, etc;

rdfs:subClassOf

NamedPizza is sub class of Pizza
rdf:property

ObjectProperty

hasIngredient, hasTopping, hasBase

DatatypeProperty

related to a datatype (integer, float, etc;)

rdf:subPropertyOf

hasTopping is sub property of hasIngredient

rdfs:domain

instances of hasTopping property can only be applied to Pizza individuals
**rdf:range**

individuals using `hasTopping` may only have instances of `PizzaTopping` as values

**Individuals**

FourSeasons, Diavolo, Proscuitto, etc;
equivalentClass

Cheesy Pizza, Interesting Pizza

AllDifferent

America, England, France, Germany, Italy
inverseOf

isBaseOf is inverse of hasBase

transitiveProperty

isIngredientOf
FunctionalProperty

hasBase, hasSpiciness

InverseFunctionalProperty

isBaseOf, hasBase
allValuesFrom

All pizzas which have as topping some values from HamTopping, MozzarellaTopping, MushroomTopping, OliveTopping and TomatoTopping are instances of class La Reine.

someValuesFrom

the MeatyPizza must have some values from MeatTopping
minCardinality

An individual of the class InterestingPizza must have at least 3 toppings.

intersectionOf

An individual of the class ReallItalienPizza is the intersection of hasCountryOfOrigion (Italy) and certain instances of Pizzas.
oneOf (enumerated classes)

Country (must be one of the following collection (no more, no less): America, England, France, Germany or Italy)

hasValue

An individual of RealItalienPizza has the restriction that the property hasCountryOfOrigin must have the value “Italy”
disjointWith

All individuals of the named Pizza Margaritha are disjoint with instances of PrinceCarlo, FourSeasons, FruttiDiMare etc;

unionOf

An individual of the Pizza Rosa is an union of instances of GorgonzolaTopping, MozzarellaTopping and TomatoTopping
complementOf

NonVegetarianPizza is the complement of VegetarianPizza
Common Problems [1]

• Open World Reasoning
• someValuesFrom – allValuesFrom
• failure to make all information explicit - assuming that information implicit in names is “represented” and available to the classifier. (Meaty Vegetarian Pizza)
• Domain and range constraints are axioms (hasTopping domain Pizza)

Readings

W3C (OWL Web Ontology Language Overview)
http://www.w3.org/TR/owl-features/


Thank you!