

Building a pizza ontology

What is a **pizza**?

The answer depends on how we are going to use our ontology...



All pizzas (among other things) have some base that is a **pizza base** and also have some topping that is a **pizza topping**.

- A pizza base can be either a **deep pan base** or a **thin and crispy base**.
- There are lots of pizza toppings: cheese topping, fish topping, meat topping, vegetarian topping, vegetable topping, etc.

Building Taxonomy

pizza base
 thin and crispy base
 deep pan base

pizza topping
 cheese topping
 mozzarella topping
 parmesan topping
 meat topping
 ham topping
 pepperoni topping
 salami topping
 spiced beef topping
 seafood topping
 anchovy topping
 tuna topping
 vegetable topping
 caper topping
 mushroom topping
 olive topping
 onion topping
 pepper topping
 jalapeno pepper topping
 red pepper topping
 tomato topping

- Are all these toppings different?
- Define MeatyVegetable topping as a subclass of both Meat and Vegetable.

Classes of Pizzas

- **Cheesy pizzas** are those pizzas that have, among other things,
some cheese topping.
- **Margherita pizzas** have, among other things, some mozzarella topping and
also some tomato topping.
- Are Margherita pizzas cheesy?

If they are, why Protégé does not know this fact?

- A **vegetarian pizza** is any pizza that, among other things, both does not have
some meat topping and also does not have some fish topping.
- Are Margherita pizzas vegetarian?

Well, the definition above allows us to add some meat to a Margherita pizza.

What is the correct definition?

Specifying Ingredients

MargheritaPizza

TomatoTopping

MozzarellaTopping

AmericanPizza

TomatoTopping

PepperoniSausageTopping

MozzarellaTopping

AmericanHotPizza

same ingredients

JalapenoPepperTopping 🌶️

+

SohoPizza

TomatoTopping

MozzarellaTopping

OliveTopping

OnionTopping

Hint: use **hasTopping** object property

Extend the ontology with the following knowledge

- A vegetarian topping is any pizza topping that is a cheese topping or a vegetable topping or a fruit topping
- A non-vegetarian pizza is any pizza that is not vegetarian
- Every pizza base is either a deep pan base or a thin and crispy base.
- All pizzas (among other things) have some base that is a pizza base and also have some topping that is a pizza topping
- A vegetarian pizza is any pizza that, among other things, both does not have some meat topping and also does not have some fish topping.
- An interesting pizza is any pizza with at least three toppings
- How can we describe spiciness of pizzas?