Homework 2: Spring 2022.

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Abstract— In this submission we solve two problems – "is a hot dog a sandwich?" & …

1 IS A HOT DOG A SANDWICH?

1.1 Definition of the concept of a sandwich

Sandwich: an item of food consisting of two pieces of bread with a filling between them, eaten as a light meal.

Food	Definition of the concept	Is a sandwich?
BLT	A bacon, lettuce, and tomato filling between two pieces of bread.	Yes
Hamburger	patty of ground meat, typically beef—placed inside a sliced bun or bread roll	Yes
Turkey and swiss on potato roll	turkey cutlets with a potato mixture rolled up from the long side.	No
Meatball Sub	Meat filling in submarine shaped buns	Yes
tuna salad on brioche	Two slices of brioche bread that has a tuna filling	Yes
Chicken Wrap	A thin tortilla or roti (as well call it India) wrapping a chicken filling	No
Chip butty	Chips & Butter between breads.	Yes

Burrito	A tortilla wrapped into a sealed cylindrical shape with different ingredients.	No
Ice cream sandwich	Ice-cream between two different biscuits, wafers, or cookies	Yes
Grilled Cheese	Butter & Cheese between slices of bread	Yes
turkey hero	hearty turkey, cheese, and vegetables between two thinly sliced buns.	Yes
Ice cream taco	hand-sized corn or wheat tortilla topped with ice cream	No
Vada pav	A potato filling in a single slice of a bun	No
Toast	One or more slices of bread exposed to radiant heat	No
Cheese Quesadilla	A cheese filling between two tortillas'	Yes
Veggie burger	burger patty that does not contain meat and bun above and below	Yes
Klondike bar	square of ice cream coated with a thin layer of chocolate.	No
Buttered biscuit	Bacon, Egg, and Cheese between buttermilk biscuit	Yes

| Gyro	Greek dish of roasted meat served in a pita wrap	No
Sushi rolls	rolled inside-out with Rice, cucumber, and crab meat	No
Patty melt	Round beef patty with melted cheese between bread	Yes
Calzone	Italian folded Pizza	No
Sloppy Joe	ground beef, onions, tomato sauce or ketchup between two buns	Yes

1.2 Incremental Concept Learning

Let's use 4 examples of potential sandwiches to demonstrate incremental concept learning.

1.2.1 *BLT Sandwich*

BLT: Positive example of a sandwich

Initial concept
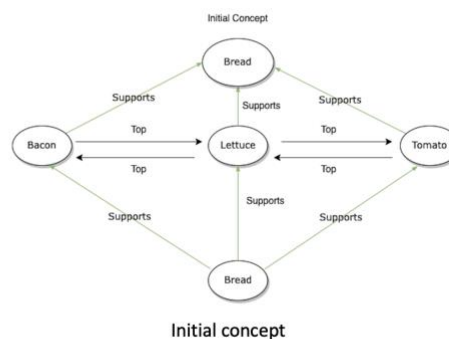
1.2.2 *Hamburger*

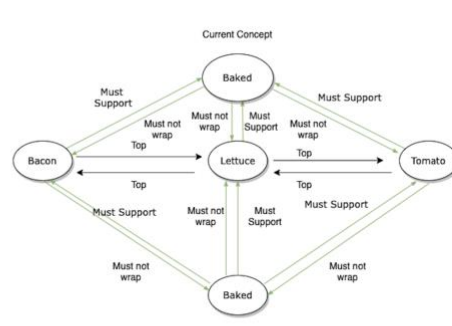Hamburger: Positive example of a sandwich
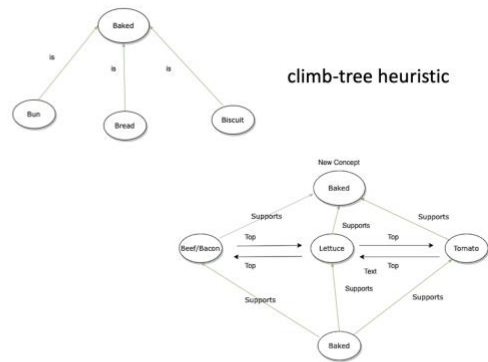
New concept: Generalizing by enlarging set

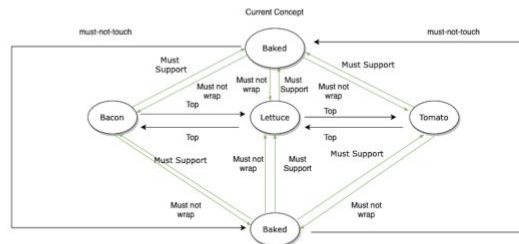### 1.2.3 *Chicken Wrap*

Chicken Wrap: Negative example of a sandwich

New concept: Require link & Forbid Link

1.2.4 *Vada Pav*

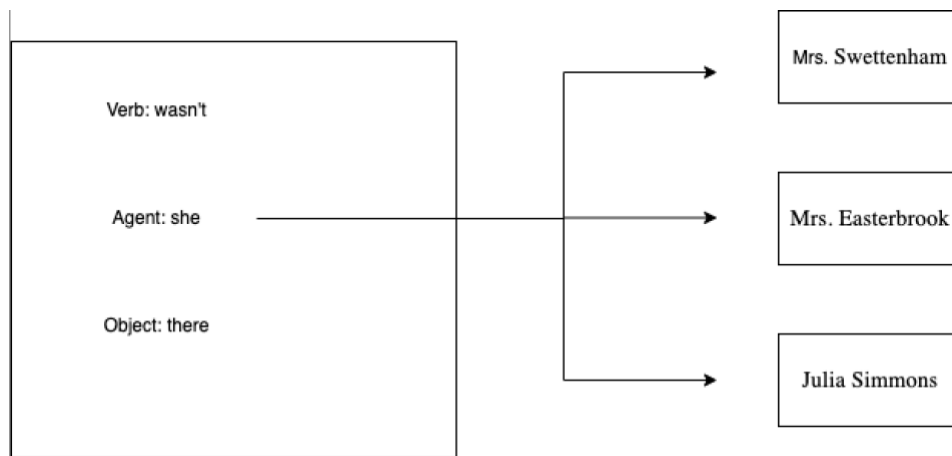Vada Pav: Negative example of a sandwich

New concept: Require link & Forbid Link heuristic

1.3 Is hotdog a sandwich?

Based on the model we've developed using incremental concept learning, a hot dog is indeed a sandwich. By case-based reasoning it's most like a hamburger.

2 SHE WASN'T THERE

The AI agent could detect the Subject in the sentence emphasized with the Agent: She – She here further points to the main subjects in the argument - Mrs. Swettenham, Mrs. Easterbrook, and Julia Simmons.

2.1 Different emphasis on words

Different emphasis on words could lead to different meanings deciphered by the AI agent. An emphasis on the word "there" could mean that the actual subject wasn't present in the drawing room and could have been somewhere else.
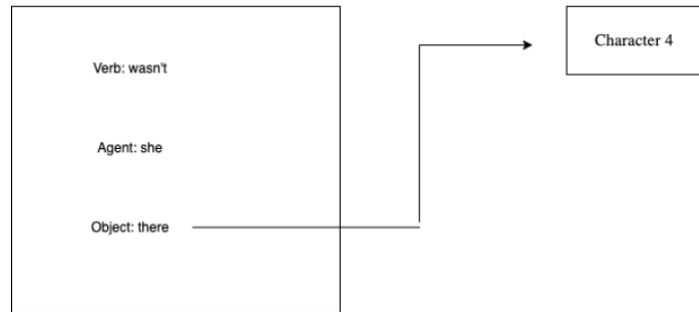
Focus on **wasn't** – is a confirmation of the subject not being in the room.
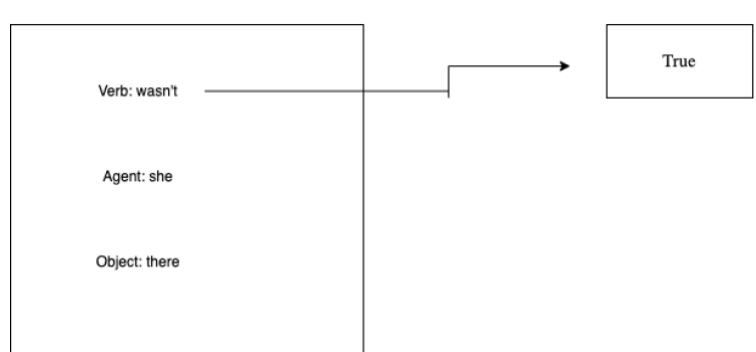
2.2 Prevent tunnel vision

To prevent tunnel vision the AI agent should be able to detect the right emphasized word. Possible strategies that the agent could use to detect these is by using inference by analyzing preceding text and frequency of usage. Once the emphasis has been determined it can generate and test multiple meanings associated with different emphasis. We can even deduce different equivalence classes that can be associated with the different emphasis.