Food2Vec

Creating Fusion Recipes with Machine Learning

By Carlie Badder

THE HUNGER

I love cooking.

THE INSPIRATION

Mac n’ Cheese Pizza

THE INSPIRATION

Taco Pizza

THE EQUATION

(NY Style Pizza)

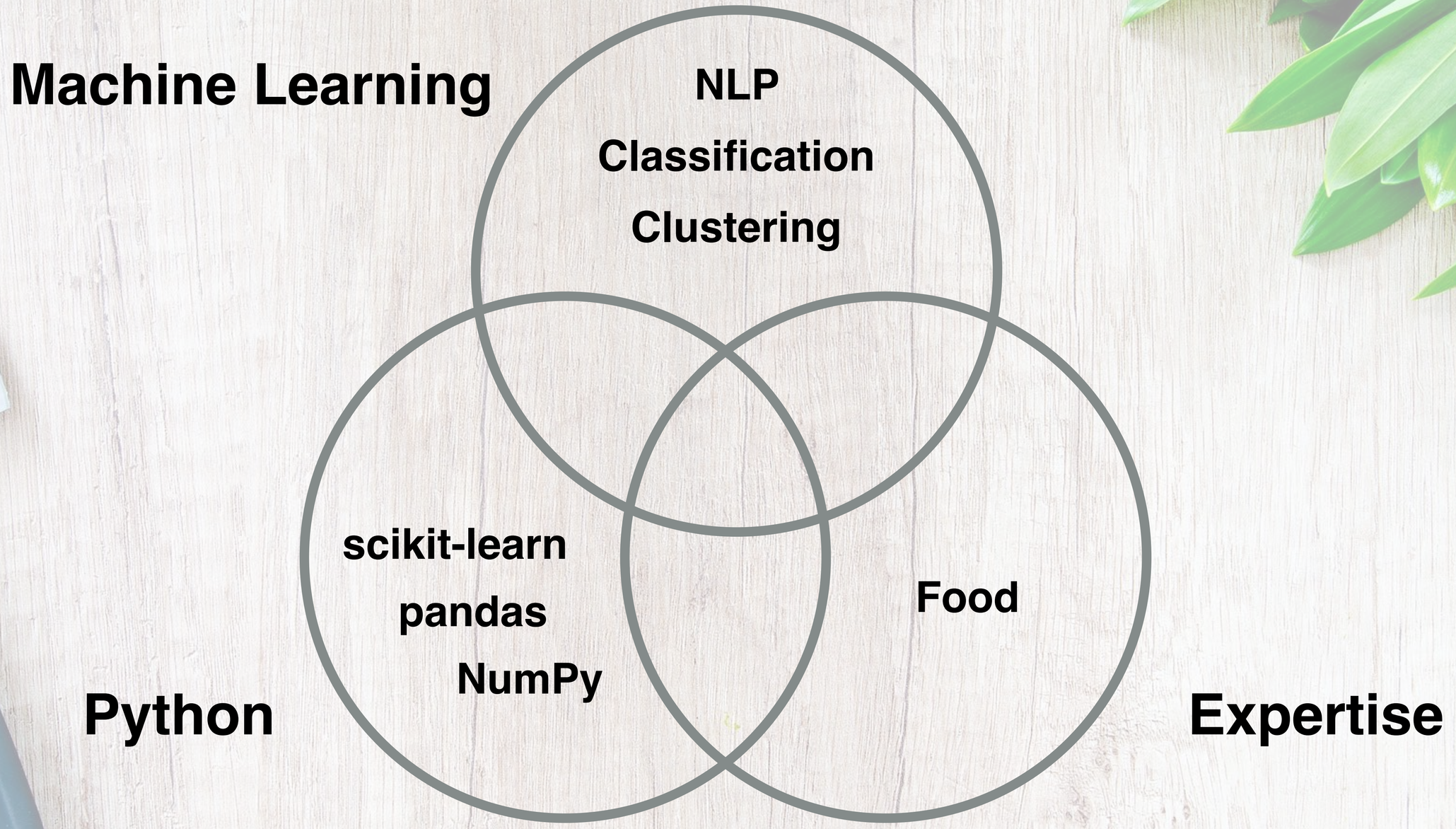
- (American Cuisine)

+ (Mexican Cuisine)

= Taco Pizza

Basically, could I "*Mexican-ify*" a pizza using Machine Learning?

THE EQUIPMENT

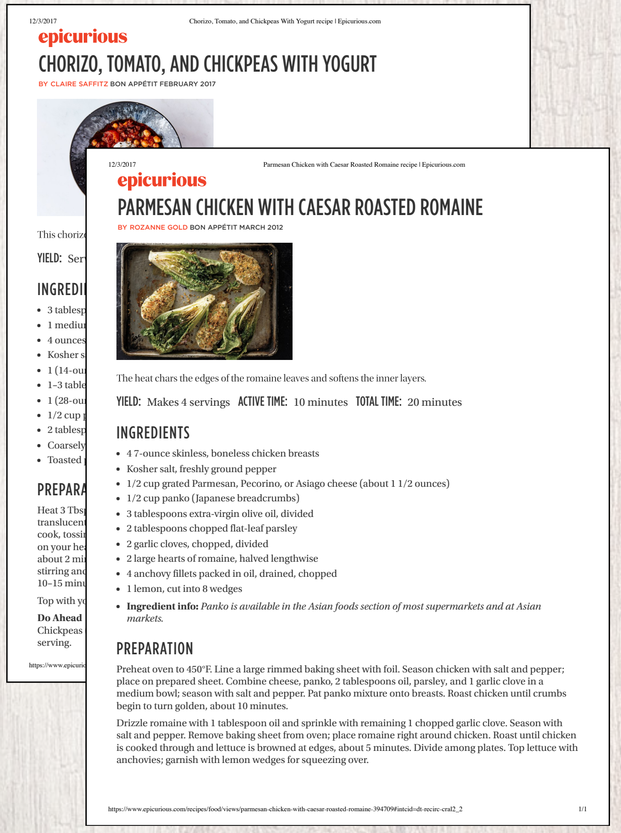


THE INGREDIENTS

- 18,000 Recipes from Epicurious
- 9 Cuisines
- 1 Custom word2vec model
- 1 Ingredient parser

THE CUISINES AND PROFILES

Recipes



12/3/2017 Chorizo, Tomato, and Chickpeas With Yogurt recipe | Epicurious.com

epicurious

CHORIZO, TOMATO, AND CHICKPEAS WITH YOGURT

BY CLAIRE SAFFITZ BON APPÉTIT FEBRUARY 2017

This chorizo

YIELD: Ser

INGREDI

- 3 tablesp
- 1 mediu
- 4 ounces
- Kosher s
- 1 (14-ou
- 1–3 table
- 1 (28-ou
- 1/2 cup p
- 2 tablesp
- Coarsely
- Toasted

PREPARA

Heat 3 Tbs translucent cook, tossi on your he about 2 mi stirring and 10–15 minu

Top with y

Do Ahead Chickpeas serving.

https://www.epicuri

12/3/2017 Parmesan Chicken with Caesar Roasted Romaine recipe | Epicurious.com

epicurious

PARMESAN CHICKEN WITH CAESAR ROASTED ROMAINE

BY ROZANNE GOLD BON APPÉTIT MARCH 2012

The heat chars the edges of the romaine leaves and softens the inner layers.

YIELD: Makes 4 servings ACTIVE TIME: 10 minutes TOTAL TIME: 20 minutes

INGREDIENTS

- 4 7-ounce skinless, boneless chicken breasts
- Kosher salt, freshly ground pepper
- 1/2 cup grated Parmesan, Pecorino, or Asiago cheese (about 1 1/2 ounces)
- 1/2 cup panko (Japanese breadcrumbs)
- 3 tablespoons extra-virgin olive oil, divided
- 2 tablespoons chopped flat-leaf parsley
- 2 garlic cloves, chopped, divided
- 2 large hearts of romaine, halved lengthwise
- 4 anchovy fillets packed in oil, drained, chopped
- 1 lemon, cut into 8 wedges
- **Ingredient info:** *Panko is available in the Asian foods section of most supermarkets and at Asian markets.*

PREPARATION

Preheat oven to 450°F. Line a large rimmed baking sheet with foil. Season chicken with salt and pepper; place on prepared sheet. Combine cheese, panko, 2 tablespoons oil, parsley, and 1 garlic clove in a medium bowl; season with salt and pepper. Pat panko mixture onto breasts. Roast chicken until crumbs begin to turn golden, about 10 minutes.

Drizzle romaine with 1 tablespoon oil and sprinkle with remaining 1 chopped garlic clove. Season with salt and pepper. Remove baking sheet from oven; place romaine right around chicken. Roast until chicken is cooked through and lettuce is browned at edges, about 5 minutes. Divide among plates. Top lettuce with anchovies; garnish with lemon wedges for squeezing over.

https://www.epicurious.com/recipes/food/views/parmesan-chicken-with-caesar-roasted-romaine-394709#intcid=dl-recirc-crsl2_2 1/1

Cuisines

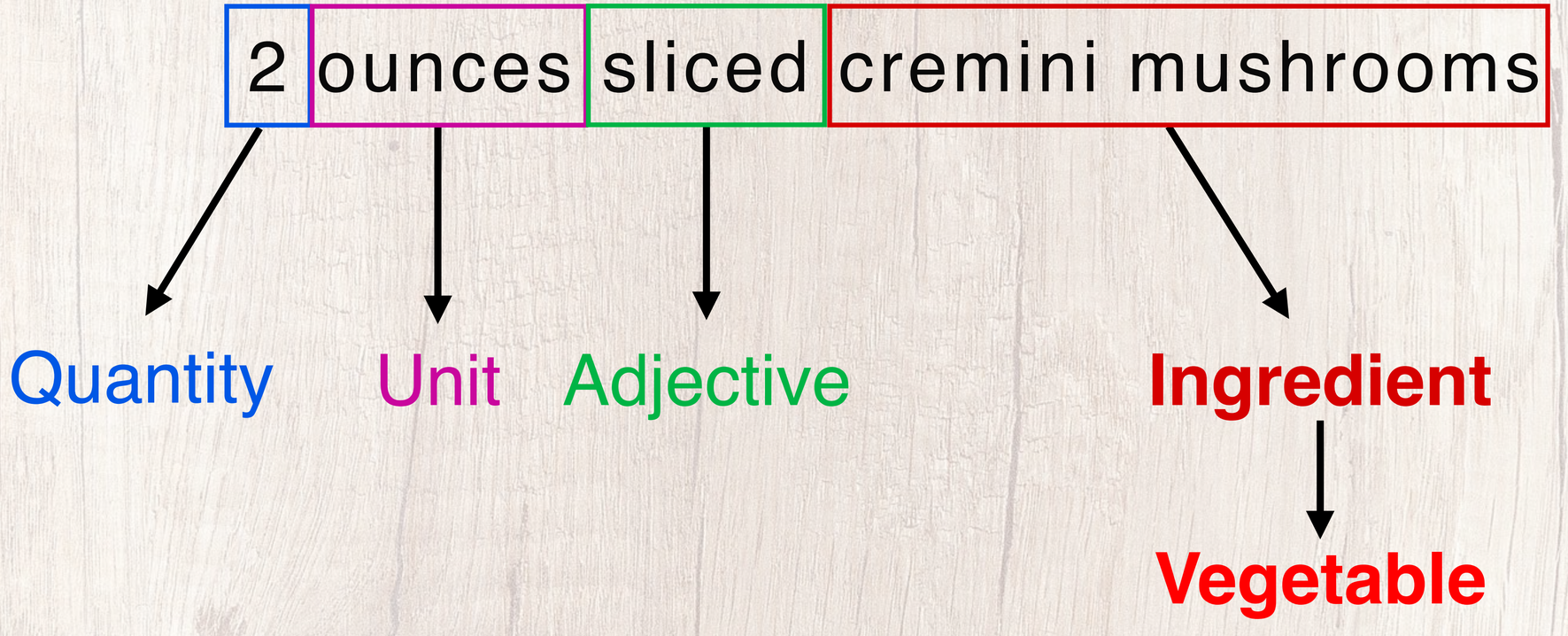
African
American
Asian
Dessert
Eastern European
Jewish
Latin
Middle Eastern
Western European

Cuisine Profiles

chicken	10%
corn	5%
cilantro	2%
chili pepper	3%
...	...

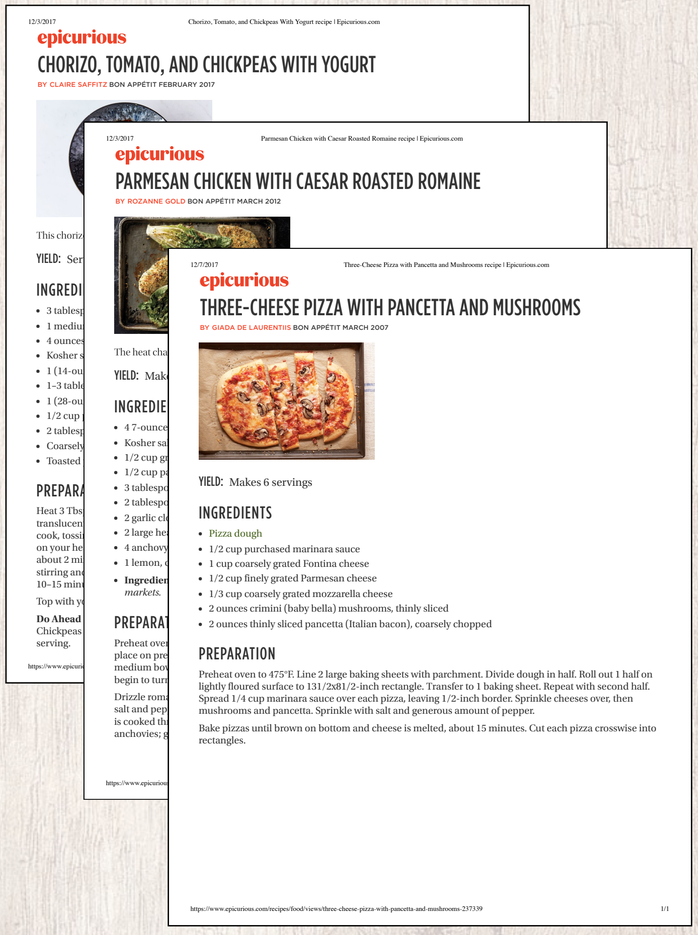
THE INGREDIENT PARSER

Input Ingredient:



THE WORD2VEC MODEL

Cooking Terms



12/3/2017 Chorizo, Tomato, and Chickpeas With Yogurt recipe | Epicurious.com

epicurious

CHORIZO, TOMATO, AND CHICKPEAS WITH YOGURT

BY CLAIRE SAFFITZ BON APPÉTIT FEBRUARY 2017

12/3/2017 Parmesan Chicken with Caesar Roasted Romaine recipe | Epicurious.com

epicurious

PARMESAN CHICKEN WITH CAESAR ROASTED ROMAINE

BY ROZANNE GOLD BON APPÉTIT MARCH 2012

12/7/2017 Three-Cheese Pizza with Pancetta and Mushrooms recipe | Epicurious.com

epicurious

THREE-CHEESE PIZZA WITH PANCETTA AND MUSHROOMS

BY GIADA DE LAURENTIIS BON APPÉTIT MARCH 2007

YIELD: Makes 6 servings

INGREDIENTS

- Pizza dough
- 1/2 cup purchased marinara sauce
- 1 cup coarsely grated Fontina cheese
- 1/2 cup finely grated Parmesan cheese
- 1/3 cup coarsely grated mozzarella cheese
- 2 ounces crimini (baby bella) mushrooms, thinly sliced
- 2 ounces thinly sliced pancetta (Italian bacon), coarsely chopped

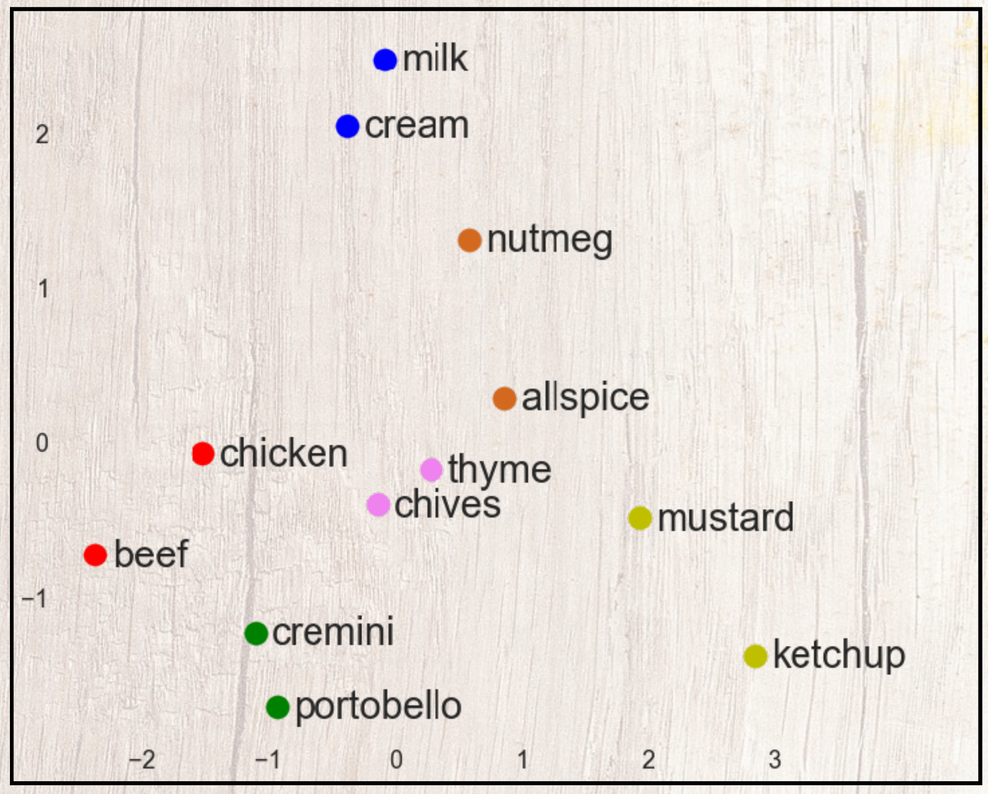
PREPARATION

Preheat oven to 475°F. Line 2 large baking sheets with parchment. Divide dough in half. Roll out 1 half on lightly floured surface to 131/2x81/2-inch rectangle. Transfer to 1 baking sheet. Repeat with second half. Spread 1/4 cup marinara sauce over each pizza, leaving 1/2-inch border. Sprinkle cheeses over, then mushrooms and pancetta. Sprinkle with salt and generous amount of pepper.

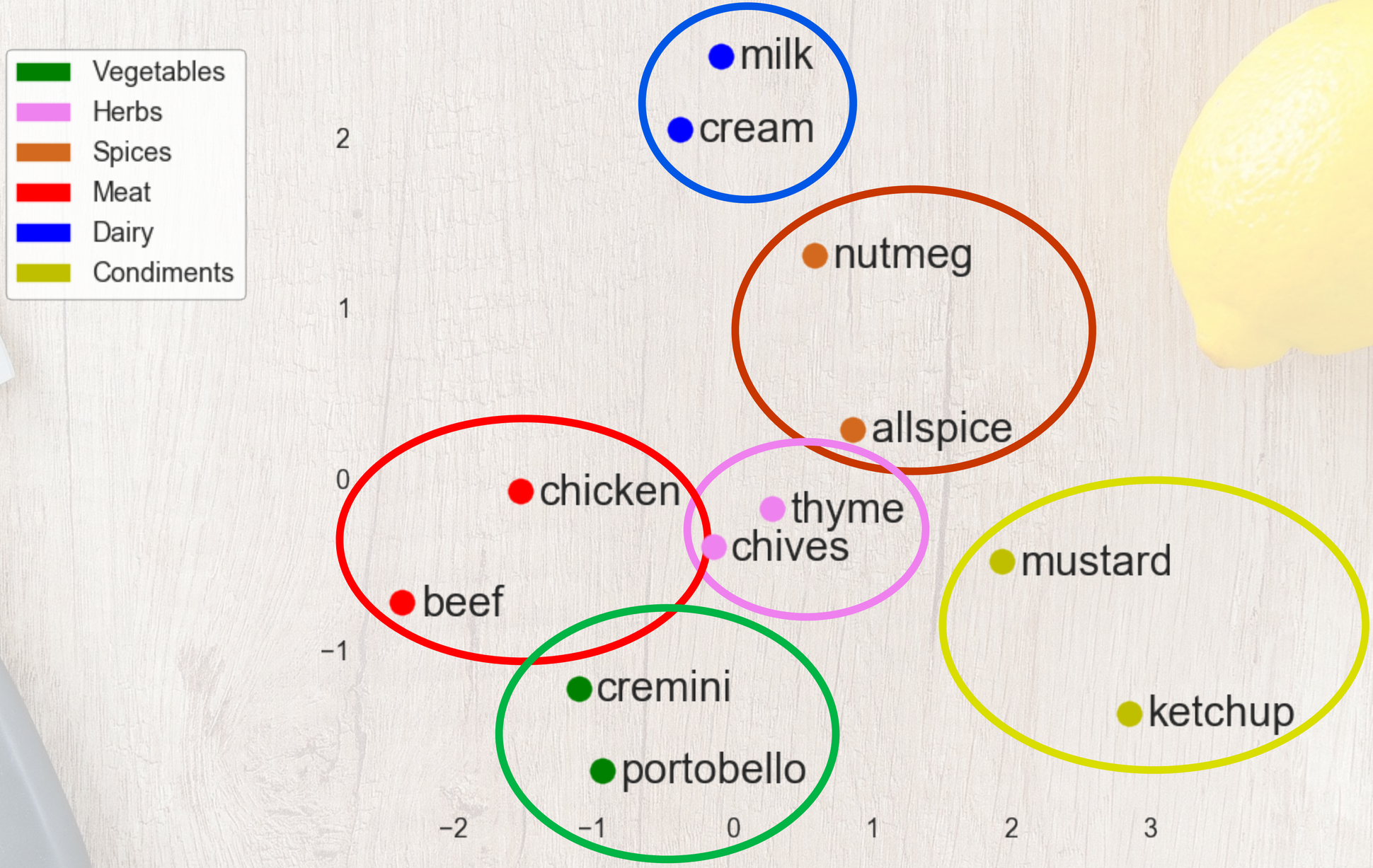
Bake pizzas until brown on bottom and cheese is melted, about 15 minutes. Cut each pizza crosswise into rectangles.

https://www.epicurious.com/recipes/food/views/three-cheese-pizza-with-pancetta-and-mushrooms-237339 1/1

Vector Space



THE INGREDIENT PARSER



Three Cheese Pizza with Pancetta and Mushrooms

Original Cuisine: American
Cuisine Filter: Latin

Three Cheese Pizza with Pancetta and Mushrooms

Original Cuisine: American
Cuisine Filter: Latin

Pizza dough

1/2 cup purchased **marinara sauce**

1 cup coarsely grated **Fontina cheese**

1/2 cup finely grated **Parmesan cheese**

1/3 cup coarsely grated **mozzarella cheese**

2 ounces **cremini mushrooms**, thinly sliced

2 ounces thinly sliced **pancetta**, coarsely chopped

Three Cheese Pizza with Chorizo ~~Pancetta~~ and Portobellos ~~Mushrooms~~

Original Cuisine: American
Cuisine Filter: Latin

Puff pastry ~~Pizza dough~~

1/2 cup purchased **marinara sauce**

1 cup coarsely grated **Fontina cheese**

1/2 cup finely grated **pepper jack cheese** ~~Parmesan cheese~~

1/3 cup coarsely grated **gouda cheese** ~~mozzarella cheese~~

2 ounces **portobello mushrooms** ~~cremini mushrooms~~, thinly sliced

2 ounces thinly sliced **chorizo** ~~pancetta~~, coarsely chopped

Three Cheese Pizza with Chorizo and Portobello Mushrooms

Puff Pastry

1/2 cup purchased marinara sauce

1 cup coarsely grated Fontina cheese

1/2 cup finely grated pepper jack cheese

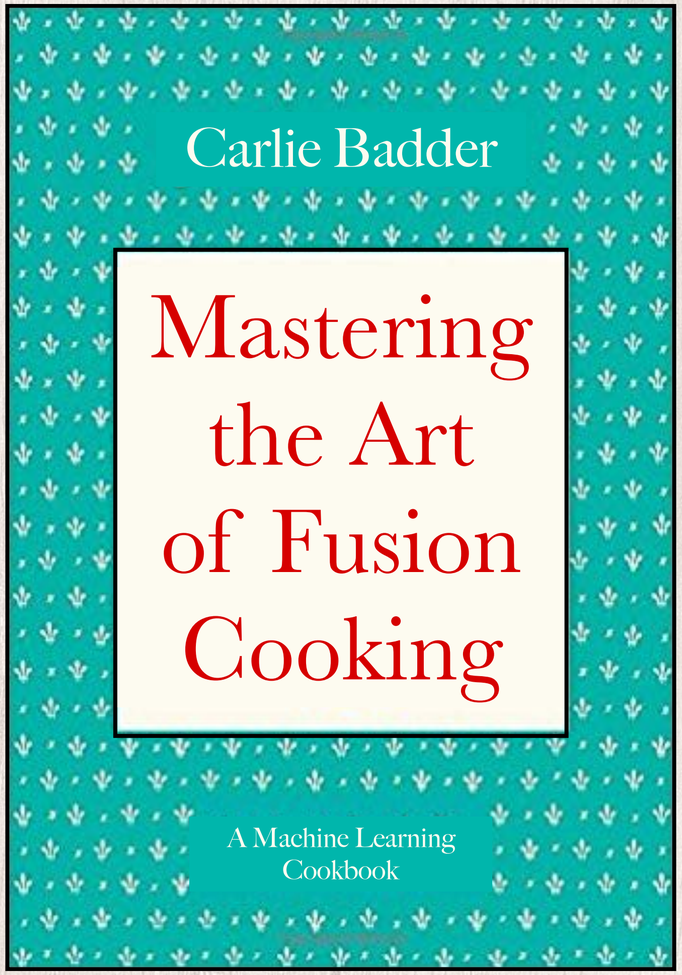
1/3 cup coarsely grated gouda cheese

2 ounces portobello mushrooms, thinly sliced

2 ounces thinly sliced chorizo, coarsely chopped

Future Work

- More recipes!
- A web app
- More cuisines



Thank you!

badderc@gmail.com

badderc.github.io

443-257-0902

carlie-badder

badderc