**Introduction/Business Problem**

Los Angeles is ethnically diverse, religiously varied, commercially driven, attractive place. For personal interests, as I have spent few years in this place, I want to dig into the food culture of the neighborhood there.

Every LA neighborhood has one: A pastry shop where the air smells sweet, the conversation is light, and the coffee is hot. Bakeries make everything from bread to cookies, but pastry shops specialize in sugar, especially when it involves flaky doughs, frosted cakes, and glistening tarts. Open for breakfast, pastry shops serve warm cinnamon rolls or many-layered cherry danishes, tall biscuits, or soft muffins studded with berries. Pastry shops are where diners go to order a birthday cake, meet over a slice of pie, or dive face first into a cupcake. They’re almost always open all day, too, so they also attract those looking for a sweet fix just before the sun starts to set.

In this research, we will look into the restaurant categories with different food types as attributes to build up a unsupervised machine learning classifier model to classify the stations into clusters and study how neighborhood differs from each other and make recommendations on what types of restaurant are specifically popular for clusters.

**Data**

We will need the following data to properly address the business question:

* The geographic coordinates (longitude and latitude) of each LA neighborhood of are retrieved from OpenCageGeocode API
* The venues of each neighborhood retrieved through FourSquare Places API
* The data is then merged, cleaned and preprocessed for explicability, understandability and meeting business requirements purpose.

Once this data is obtained in the required format, the corresponding latitude and longitude coordinates for each neighborhood will be obtained using the python Geocoder package.

We will use the Foursquare API to explore neighborhoods in LA. Here, we will construct a URL to send a request to the API to search for a specific type of venue that is relevant to restaurants in each neighborhood, and then use this feature to group the neighborhoods into clusters. We will use the k-means clustering algorithm to complete this task.

Finally, we will use the Folium library to visualize the neighborhoods in LA and their emerging clusters.