**Enter Title Here**

**1. Motivation/Background**

**What are you trying to do? Articulate your objectives using absolutely no jargon.**

**Who cares? If you are successful, what difference will it make?**

In recent years, travelling to new destinations has gained more popularity, especially among the millennials. The quality of travel is not only limited to the kind of destination but is more about the overall experience. From staring at beautiful desktop wallpapers, we have come a long way to constantly browsing through the internet and striving to secure optimum deals on flights, stay, food, activities, car-rentals and others, to get bang for the buck we spend on travelling. Are we always successful in doing so?

For this project we make an attempt to club 3 main aspects of travel - flight, stay and food in the travel package (novel idea). Popular platforms like expedia, airbnb, yelp, etc. flood us with so many options that we get bounded with time to evaluate all the permutations for the best possible offer. This limitation seeds our project - to make a fast, easy, and personalized travel package recommendation system, to fit in your budget. Every customer would gain from such a “one-stop shop” platform, where he/she would answer a few travel queries and the system would not only recommend a destination(s), but also various options of stay in that city and places to eat as per the individual’s food preference with everything fitting under the maximum budget.

Thus, the customer is saved from the headache of doing complicated math in the mind and receiving options for best-valued travel package in the matter of just a few clicks.

**2. Reaction to existing papers/technologies [10 points]**

**This section will deal with the following:**

**How is it done today, and what are the limits of current practice?**

Currently, the search can be made manually or by travel agencies. The process can be expensive and time consuming and still not be fully satisfiable. Sometimes travelers do not find the places exciting or as per their likings even after spending lots of money.

**This section is basically your literature review and should include the summary/critique/shortcomings of the papers (existing methods) you came across while researching your topic. Cite at least 3 works.**

Several studies have been performed over the past few decades to build search engines [1-3]. Wissner et al. patented a search system that generates user-customized search results with the use of user-defined semantic types even as late as 2015 [3]. There have been successful attempts to create a search engine for hotel recommendations for Expedia users by training open-source data from Kaggle with SVM and decision tree to direct a given textual query to “hotel cluster” corresponding to it [4]. Among the most recent studies that ties hotels for special purposes like vacation or business based on flight information was done by Thomas et al. [5] where they devised a system as a cascaded machine learning pipeline, which would be equipped to identify an optimal list of relevant hotels based on all information about the trip. There have also been numerous studies that have used Yelp datasets in order to design recommender systems for predicting user preferences [6], or ratings in general [7]. In this project, we would like to leverage the knowledge from such studies into the flight and hotel aspects in quest for building a hybrid three-aspect search engine.

**3. Plan of Action [20 points]**

**This section will deal with the following:**

**What is your proposed approach and why do you think it will be better than the existing work?**

As mentioned above, our approach will be easy and user friendly where users can get the personalized recommendations on a few clicks. Users can get the best out of their money. This will save users from browsing on the internet and spending a lot of money on the packages provided by travel agencies. This will get all 3 aspects together in one portal. One of the existing works only includes Flights and Hotels but does not consider food recommendations.As Food is an important part of travel. It will give the clear picture of travel cost. *word2Vec* can be used for more accurate results. Our model may also consider safety environment and pedestrian friendly categories. Moreover, Price prediction can help to know if any current travel package provided by the agency is overpriced or underpriced.

**What are the risks and anticipated challenges that may be a roadblock for your project?**

We may have to do web scraping for collecting data. This may include multiprocessing, multiple headers or multiple proxies. Aggregating all three aspects together in one platform can be challenging. Besides, to test the effectiveness and validate the proposed methodology, it would be essential to devise a rating system to manually score the different permutations of packages based on the appropriateness for a given text query. That would give us a parameter to test and quantify the performance of the model that we expect to design.

**Which dataset will you use?**

For Flights, we will use the expedia dataset. For hotels, we will use Airbnb dataset. For food, we are going to use Yelp dataset. We may need to do some web scraping for some of the attributes

**Which code repository will you start with, if any?**

We don’t have any code repository for this readily available. We have codes for different aspects of the proposed work and as a part of this project, we will make an effort to bring them under one umbrella to build the proposed search engine.

**Resources**

[1] Kruger, Andries, et al. "DEADLINER: Building a new niche search engine." Proceedings of the ninth international conference on Information and knowledge management. 2000.

[2] Gulli, Antonio, and Alessio Signorini. "Building an open source meta-search engine." Special interest tracks and posters of the 14th international conference on World Wide Web. 2005.

[3] Wissner, James M., and Nova T. Spivack. "Generating user-customized search results and building a semantics-enhanced search engine." U.S. Patent No. 9,037,567. 19 May 2015.

[4] Li, Susan. “A Machine Learning Approach - Building a Hotel Recommendation Engine.” Medium, Towards Data Science, 6 Dec. 2018, towardsdatascience.com/a-machine-learning-approach-building-a-hotel-recommendation-engine-6812bfd53f50.

[5] Thomas, Eoin, et al. "Cascaded Machine Learning Model for Efficient Hotel Recommendations from Air Travel Bookings." RecTour 2019 (2019): 9.

[6] Nikulin, Vladimir. "Hybrid recommender system for prediction of the Yelp users preferences." Industrial Conference on Data Mining. Springer, Cham, 2014.

[7] Farhan, Wael. "Predicting Yelp Restaurant Reviews." UC San Diego, La Jolla (2014).