# Term Project: Design an App in Python using a Major Framework

# Introduction

In this project, an application is built using the python programming language. The area of work in this topic is for the time series forecasting for the super store sales dataset. Time series forecasting is a method in which the important characteristics about the data is extracted using a model in which the values of the future is predicted based on the previous observed data or the data present. In this the attributes used for model building is the order date and the sales. For time series forecasting the data required is time or date and the data on which the prediction is to be carried out, thus the attributes used are order date and the sales number. The data is preprocessed and then the model is implemented. The model used for implementation is the ARIMA model (Autoregressive Integrated Moving Average). The model is implemented, fitted and then the predicted values for the sales is calculated, later the visualization of the forecasting is presented and the result is obtained.

In this report, further a detailed explanation about deploying the application on cloud and the security features that will be implemented for making the application more secure and making an application serverless if necessary and all the related point are thus discussed.

# Describe how this application can be deployed in a cloud environment.

For deploying a time series forecasting application in a cloud environment, the first step includes making or establishing the data pipeline, which makes sure that the right data is entered and stored. It then stores and evaluates the data and makes it ready for performing further steps. The second step involves the creation of forecasts or generating the forecasts for the future time interval, it makes sure that the process it repeated as the model may not be accurately fit as the data is uploaded more. The third step involves evaluation and refinement of the models, the models need to be updates as there might be some added features also. The last step involves the communication and scaling out and in (Eck et al., 2020). Implementing cloud in the system will help in repeating the process with some measures to be taken care of and save time as well. The cloud service that will be used is the AWS (Amazon Web Service).

# Describe how you would implement security features for your app in the cloud.

The steps that will be followed for implementing the security features in the cloud for the application is first implementing the multi factor authentication, the data allowed from the particular sources needs to be approved and must follow the password generated and ask for a key before entering, else any source can enter easily. Next is the access and identity management will be implemented in which the trustable sources will enter the cloud without any authentication, but with some procedures after proving the source is completely free form any third-party case or errors. More methods can be implemented thus as the cloud gateways, the key handling tools in the cloud and even mobile platform security will be implemented for operating on the smartphone as well (Talha at al., 2020).

# If you need to make your application serverless how it can be done.

Firstly, the application can be made serverless whereas serverless application means building a system which runs itself without any system to manage or handle the infrastructure underlying in it, but still it can run on the server when using serverless computing, because the AWS manages all of the servers. We will create and deploy apps on affordable services with the application with flexible and scalable options with Amazon web services as well as its Serverless Platforms. As the application is fully normalized, so it doesn’t need to setup or handle server management. The time series forecasting application will be directly uploaded to the AWS Lamba cloud service, a service of AWS and then later the service will compute and configure all of them together as well. The AWS Lambda will be used to configure the system and compute them all. The application server built in the backend will receive the API calls and then will perform logic of business then it will pass through the API Gateway and AWS Lambda and then the database will be generated and the information will be stored as well (Hellerstein et al., 2018). All the information will pass such as the application content as python and the user’s authentication and the application system authentication system and data.

# References

Eck, B., Fusco, F., Gormally, R., Purcell, M., & Tirupathi, S. (2020). Scalable deployment of AI time-series models for IoT.

Talha, M., Sohail, M., & Hajji, H. (2020). Analysis of research on amazon AWS cloud computing seller data security. *International Journal of Research in Engineering Innovation*, *4*(3), 131-136.

Hellerstein, J. M., Faleiro, J., Gonzalez, J. E., Schleier-Smith, J., Sreekanti, V., Tumanov, A., & Wu, C. (2018). Serverless computing: One step forward, two steps back. *arXiv preprint arXiv:1812.03651*.