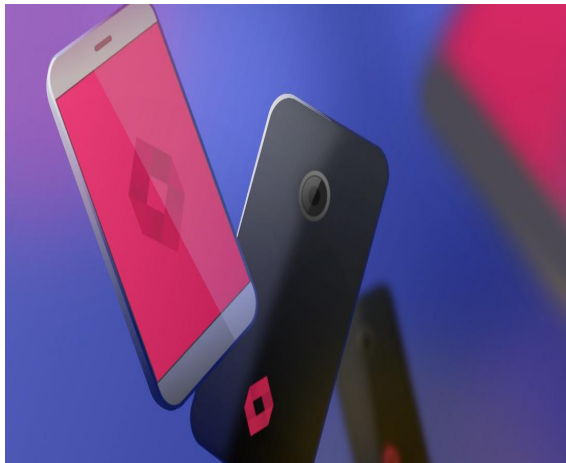


IIIT-Bangalore

DT-212 / Techno-Economics of Networks

April 01, 2021



Spectrum Data Challenge (Abstract)

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Overview :

We were given a database containing data from DotEcon's Spectrum Award Database, on various spectrum allocations done worldwide from 1994 until 2020.

Goals :

- 1. Population Coverage :** For a particular country like IND, we can visualize the population covered by various spectrum ranges in various regions. For example: In the case of INDIA we can depict the region and population covered by a particular spectrum band (2G, 3G, or 5G) in a particular year.
- 2. Country based spectrum allocation analysis :** For a particular spectrum, and a given region like (INDIA) we can depict graphically which telecom operators won the auction within a stipulated time frame and at what price. For example: In case of the IND for a particular spectrum band (2G, 3G, or 5G) band we can visualize which operator won the auction held in a particular year and at what price. This will further help us to infer the change in winning prices over the years.

3. Pricing of spectrum

Prediction : For a particular year on the basis of its past spectrum prices and using Regressors, or some other models we can predict the prices of spectrum in future.

satisfactory level we will use the model with minimum value of cost function. Then will make final predictions for future spectrum prices for a given country.

Methodology

It consists of the following steps:

- 1. Data Gathering** : Firstly, we will merge the two datasets using *lotid* as a primary key to analyze different aspects of the dataset.
- 2. Exploratory Data Analysis** : This step involves handling missing values, encoding and visualizations.
- 3. Training Model** : We will use test train split or some fold method on the data for training and testing and accordingly train and test our model over these sets respectively. We will also use a separate cross validation set/function for tuning the hyper parameters of the model.
- 4. Final Predictions** : Once we have tried different models with different parameters upto