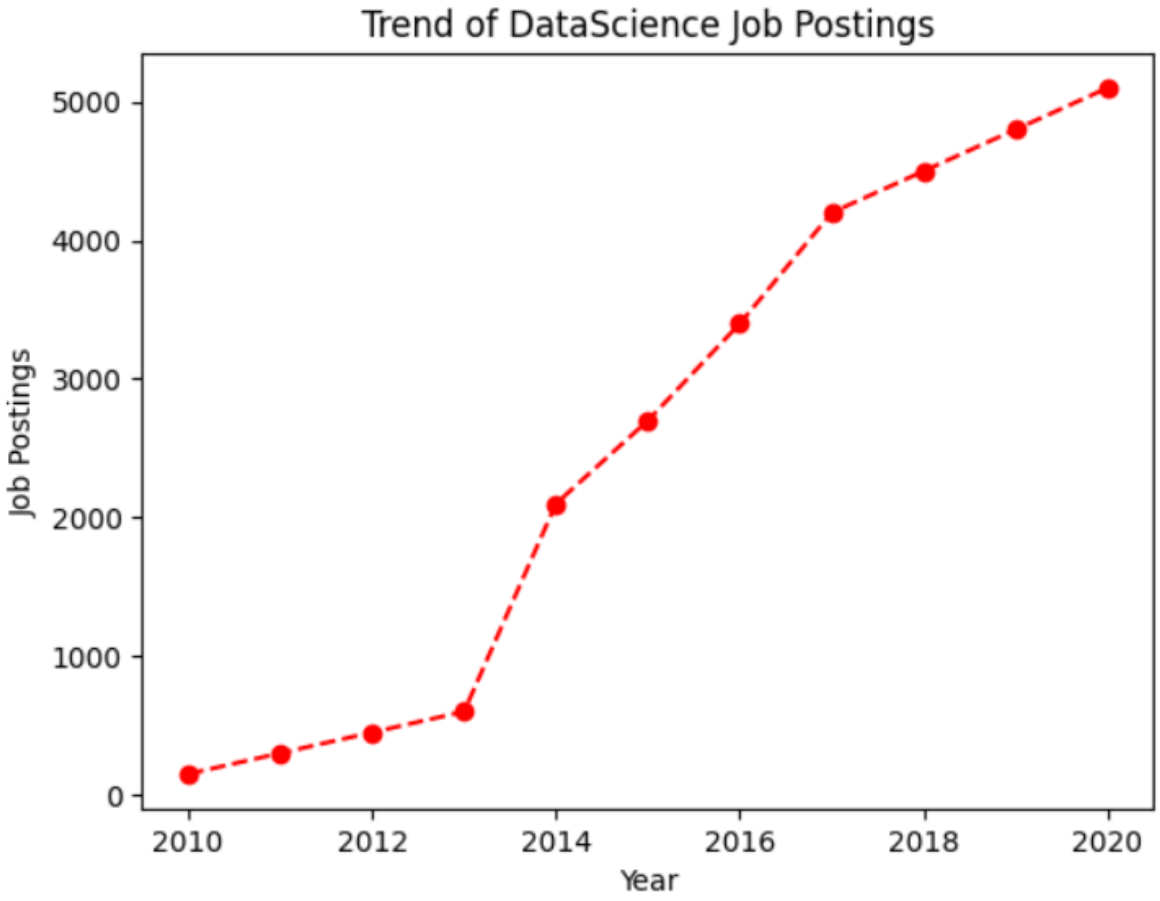
# DATA SCIENCE

DATA VISUALIZATION

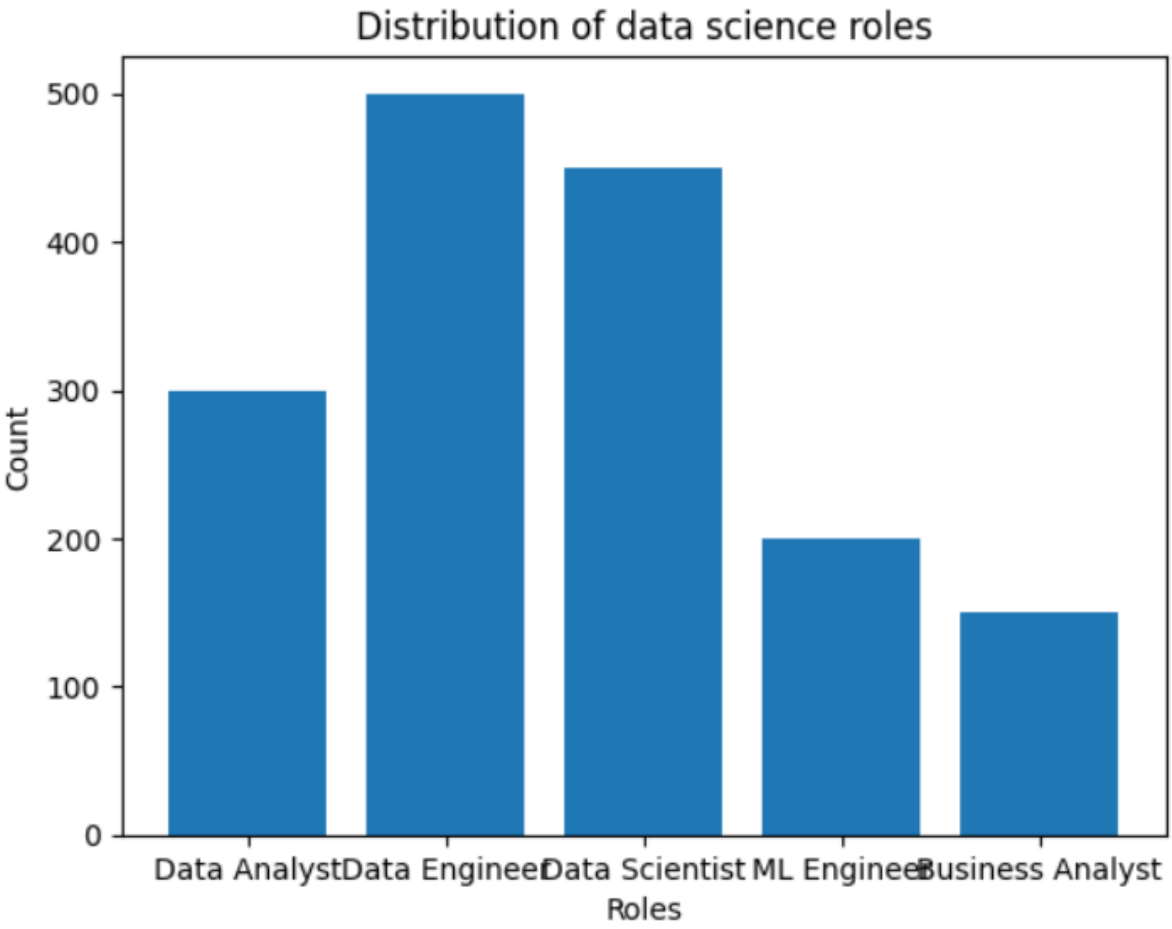
**ANALYSE THE TREND OF DATA SCIENCE JOB POSTINGS OVER LAST DECADE**

```
import pandas as pd

import matplotlib.pyplot as plt

data={"Year":list(range(2010,2021)),"Job
Postings":[150,300,450,600,2100,2700,3400,4200,4500,4800,5100]};

df=pd.DataFrame(data);

plt.title("Trend of DataScience Job Postings");

plt.plot(data["Year"],data["Job Postings"],marker="o",color="red",linestyle="--");

plt.xlabel("Year");

plt.ylabel("Job Postings");
```


Trend of DataScience Job Postings
Job Postings
0
1000
2000
3000
4000
5000
2010
2012
2014
2016
2018
2020
Year

## ANALYSE AND VISUALIZE THE DISTRIBUTION OF VARIOUS DATA SCIENCE ROLES

```
import matplotlib.pyplot as plt
roles=["Data Analyst","Data Engineer","Data Scientist","ML Engineer","Business Analyst"];
count=[300,500,450,200,150];
plt.bar(roles,count)
plt.title("Distribution of data science roles");
plt.xlabel("Roles");
plt.ylabel("Count");
```


Distribution of data science roles
Count
500
400
300
200
100
0
Data Analyst
Data Engineer
Data Scientist
ML Engineer
Business Analyst
Roles

## DIFFERENTIATE STRUCTURED,SEMI-STRUCTURED AND UNSTRUCTURED DATA

```
import pandas as pd

#STRUCTURED DATA

data=pd.DataFrame({"ID":[1,2,3],"Name":['Monisha','Jenifer','Jenita'],"Age":[20,30,40]});

print("Structured Data\n",data)

print("\n")

#UNSTRUCTURED DATA

x="This is an example of unstructured data.it can be a piece of text,an image or a video file";

print("Unstructured Data\n",x)

print("\n")

s={"ID":100,"Name":"Jenifer","Age":"25"}

#SEMISTRUCTURED DATA

print("Semi-structured data\n",s);
```

```
Structured Data
    ID     Name  Age
0   1  Monisha   20
1   2  Jenifer   30
2   3   Jenita   40


Unstructured Data
 This is an example of unstructured data.it can be a piece of text,an image or a video file


Semi-structured data
 {'ID': 100, 'Name': 'Jenifer', 'Age': '25'}
```

## CONDUCT AN EXPERIMENT TO ENCRYPT AND DECRYPT GIVEN SENSITIVE DATA

```
#GENERATE KEY AND ENCRYPT DATA
from cryptography.fernet import Fernet
key=Fernet.generate_key()
f=Fernet(key)
token=f.encrypt(b"Computer Science Engineering")
token
b'.....'
f.decrypt(token)
b'Computer Science Engineering'
key=Fernet.generate_key()
cipher_suite=Fernet(key)
plain_text=b"Computer Science Engineering"
cipher_text=cipher_suite.encrypt(plain_text)
#Decrypt data
decrypted_text=cipher_suite.decrypt(cipher_text)
print("Original Data:",plain_text)
print("Encrypted Data:",cipher_text)
print("Decrypted Data:",decrypted_text)
```

```
Original Data: b'Computer Science Engineering'
Encrypted Data: b'gAAAAABoii51khjsn2zf9e7b4y6SrR07PiiJzSTG9PpoyB1NS9Kz_cyQwlyVlMwy21t2OffRsP-nsY3wnH6KlYL2bayjPfgiNfgGoFA0T_KsCFhh2v0Sn9g='
Decrypted Data: b'Computer Science Engineering'
```

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***BY MONISHA.S***

***SECOND YEAR  CSE DEPT***

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