# **PROJECT REPORT**

# TITLE OF PROJECT: A comprehensive analysis of the IT sector Salaries and Roles

# 1. INTRODUCTION

#### 1.1 Overview

The IT sector is a rapidly evolving industry that encompasses a wide range of roles and offers diverse career opportunities. Understanding the salaries and roles within the IT sector is crucial for professionals and organisations alike. This project aims to provide a comprehensive analysis of IT sector salaries and roles, shedding light on the current trends, average salary ranges, and key factors that influence compensation.

# 1. 2 Purpose

The dataset that we used for this project had various columns like rating, company name, job title, salary, salaries reported, location, employment status and job roles. Basically, we analysed the different job roles available and the salary distribution for each which allowed us to see which job role is the best, worst and median (average) with respect to average salary. We also found out which city has the maximum number of companies and which city has maximum scope for interns, trainees, full time and contractors. Also, we found out which are the top ten companies offering the best salary. Also, top 20 companies based on ratings were found out. All this information could be used by employees looking for good job opportunities. With the help of all this information, they can figure out which city they can go to for their desired job and what will be their average earning.

#### 2. LITERATURE SURVEY

# 2.1 Existing problem

There have been various approaches and methods employed to address this problem, although their effectiveness may vary. Some of the existing approaches include:

- Online Job Portals: Platforms like Indeed, Glassdoor, and LinkedIn provide job listings and salary information. However, the data may be limited, not up-to-date, or lack specific details for different IT roles.
- Industry Surveys: Periodic surveys conducted by research organisations or industry associations can provide insights into IT roles and salaries. However, these surveys may have limited coverage, focus on specific regions or sectors, and might not capture the most recent trends.
- Recruitment Agencies: Recruitment agencies often have access to salary data and market insights. However, this information may be subjective and biassed towards the specific roles and industries they deal with.

# 2.2 Proposed solution

Data Collection: Gather relevant data from multiple sources, including online job portals, industry surveys, recruitment agencies, and publicly available information. Ensure the data covers a wide range of IT roles, industries, and geographical locations.

Data Cleaning and Preparation: Cleanse and preprocess the collected data to ensure consistency, remove duplicates, handle missing values, and format it in a suitable structure for analysis.

Data Analysis: Utilise Tableau, a powerful data visualisation tool, to explore and analyse the data. Generate visualisations and interactive dashboards to present meaningful insights on IT sector roles and corresponding salaries.

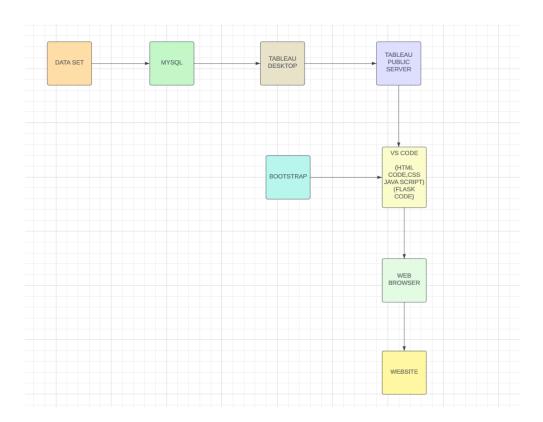
Role Classification: Classify the different IT roles based on job titles, job roles, companies, salary and rating. This step ensures a clear understanding of the various roles and facilitates accurate analysis.

Salary Analysis: Perform in-depth analysis on the salary data, and identify salary trends, ranges, and potential outliers to provide a comprehensive overview of IT sector salaries.

Dashboards and stories: Develop dashboards and stories using Tableau to allow users to explore and filter the data based on their specific requirements. This enables users to customise their analysis, compare different roles and salaries, and gain valuable insights.

# 3. THEORETICAL ANALYSIS

# 3.1 Block diagram:



# 3.2 Hardware/ Software designing

The software requirements for the project include:

- Excel which has the dataset which we used for the project.
- MySQL database into which dataset is imported.
- Tableau desktop software which is a data visualisation tool.
- Tableau public server which can be used to publish the dashboard and story created.
- VSCode which is used to run HTML, CSS, JS and bootstrap templates. It can also be used to deploy flask apps. Also, we need to install python from the internet and pip.
- Web browser for running the flask app on the port specified.

The hardware components include:

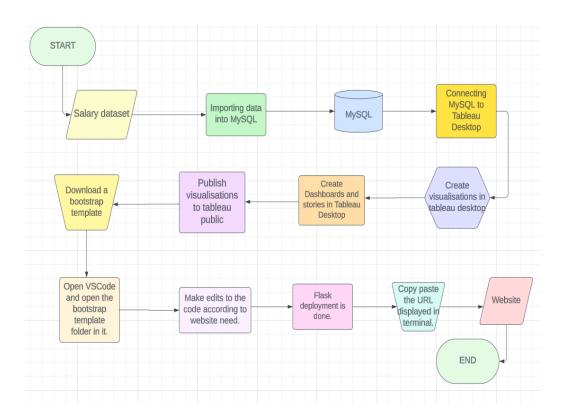
- Laptops
- Windows operating system

# 4. EXPERIMENTAL INVESTIGATIONS

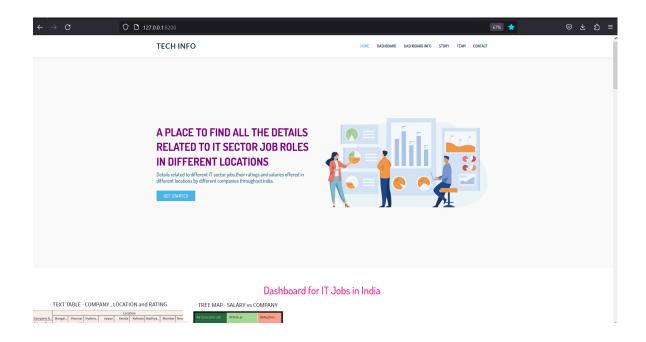
So we made various visualisations including - text table showing company, location and rating, box plot to show job roles distribution with respect to average salary, tree map to show top 10 companies with respect to sum of salary, donut chart to show top 20 companies based on average rating, bar chart showing relation between location, job roles and salary, map showing which city has how many companies and how many of them hire only interns, full time, contractor, trainee, heat map showing relation between job roles and employment status and a pie chart showing job roles with respect to salary. We investigated the dataset and analysed it as follows:

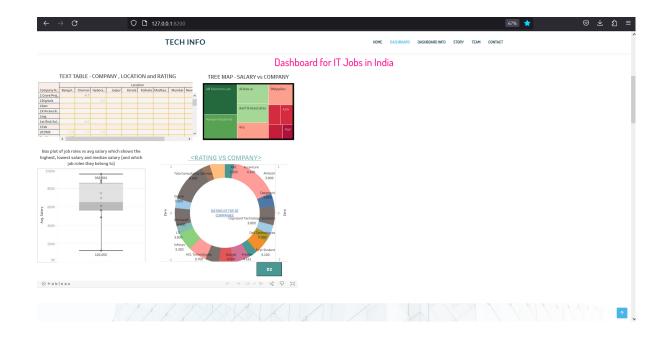
- We made a map to see which city has maximum companies and which companies out of these are interested in hiring only interns, full time, contractor, trainees. From this investigation, an employee looking to join a new job or a fresher could figure out which city to go to for their desired roles and depending on which employment status they choose to pursue they could choose a suitable location for themselves.
- We also displayed the top 10 companies based on the sum of salary using a tree map so that a job finder interested in getting hired in top companies could get help.
- Also, we made a box plot which shows distribution of job roles based on average salary. This way we could understand which job role is least popular, the most popular and which is in the list of average.
- We made a pie chart showing which job role has how many salaries reported. This could be taken together with popularity. The job roles most popular are more likely to be reported.
- Bar chart was also made which showed which job role was popular in which location and what was the average salary.
- A heat map was made showing which job role is having which employment status. On the basis of that, freshers can apply.
- A donut chart showing top 20 companies based on ratings was also shown. The companies which have maximum average ratings are most popular among employees working there. Maybe it might be due to the benefits provided or the work culture.

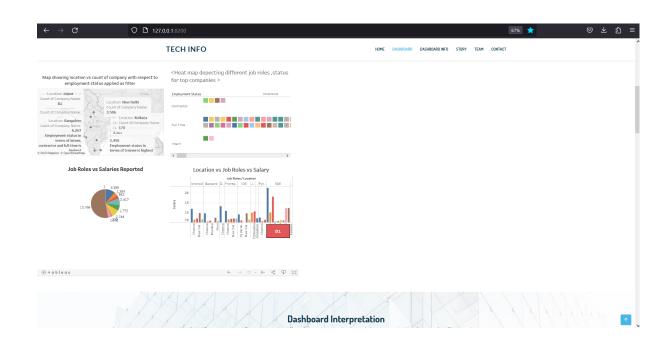
# **5.FLOWCHART**

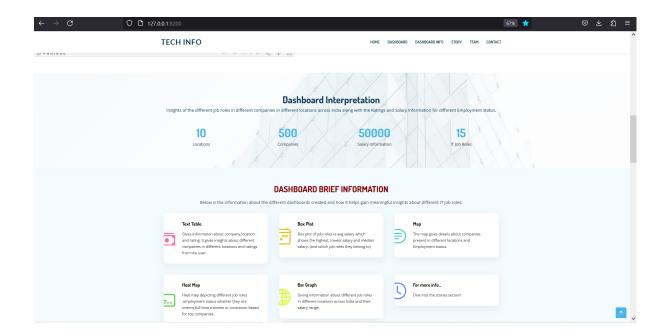


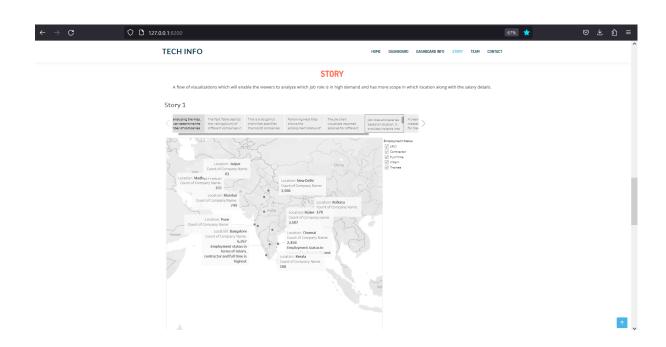
# 6. RESULT

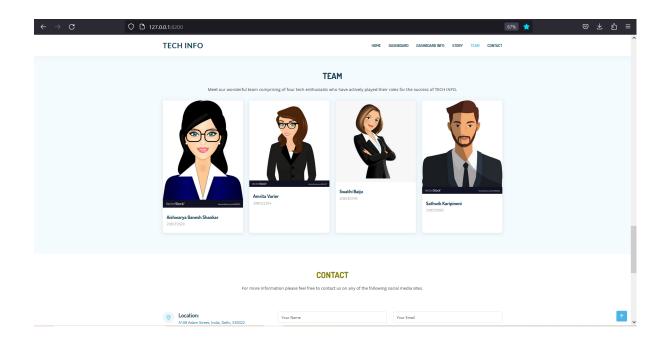


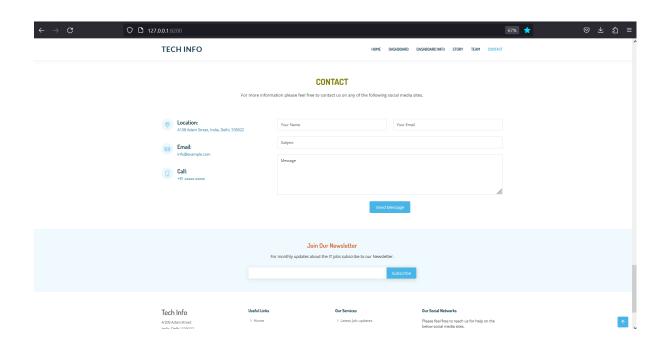












## 7. ADVANTAGES & DISADVANTAGES

#### **Data Collection:**

- Advantages: Comprehensive data coverage, diverse sources, and access to publicly available information.
- Disadvantages: Time-consuming, data quality and consistency challenges, and limitations of certain sources.

## **Data Cleaning and Preparation:**

- Advantages: Ensures data consistency and reliability, improves accuracy by removing duplicates, and handles missing values.
- Disadvantages: Complex and time-consuming, decision-making for missing values, and potential introduction of errors.

#### **Data Analysis:**

- Advantages: Powerful visualisation capabilities, better understanding through visual exploration, and effective communication of insights.
- Disadvantages: Requires advanced skills, challenges in interpreting complex visualisations, and risk of biassed conclusions.

#### **Role Classification:**

- Advantages: Provides clarity in analysis, accurate categorization and comparison of roles, and better understanding of the job market.
- Disadvantages: Subjective and challenging classification, reliance on data quality and consistency, and need for regular updates.

#### Salary Analysis:

- Advantages: Valuable insights into compensation trends, understanding of market competitiveness, and identification of outliers.
- Disadvantages: Difficulty in obtaining accurate salary data, limitations in capturing all compensation factors, and challenges in comparing across industries and locations.

## 8. APPLICATIONS

Here are some potential areas where this solution can be applied

#### **Human Resources and Talent Acquisition:**

The solution can help HR departments and recruitment agencies gather and analyse data on

IT roles and salaries to make informed decisions regarding talent acquisition, salary benchmarks, and industry trends.

#### **Job Seekers and Career Planning:**

Individuals looking for IT jobs can benefit from the solution by exploring salary trends, understanding the market demand for specific roles, and gaining insights into the skills and qualifications desired by employers.

#### **Industry Research and Analysis:**

Researchers and analysts studying the IT sector can utilise the proposed solution to gather data, analyse salary trends, and classify different IT roles. This can help in understanding industry dynamics, identifying emerging roles, and tracking the demand for specific skills.

#### **Workforce Planning and Skill Development:**

Organisations and policymakers can leverage the solution to analyse IT sector data and identify skill gaps, plan workforce development initiatives, and align educational programs to meet industry demands.

## Market Intelligence and Competitive Analysis:

Companies operating in the IT industry can use the solution to gain competitive intelligence, compare their salary offerings with industry benchmarks, and identify potential areas for improvement or market advantages.

#### **Business Strategy and Decision Making:**

Executives and managers can make data-driven decisions by utilising the proposed solution's insights on IT roles, salaries, and market trends. This can inform strategic planning, resource allocation, and organisational growth strategies.

## 9. CONCLUSION

In this project, we conducted a comprehensive analysis of the IT sector salaries and roles. We aimed to provide valuable insights into the current trends, average salary ranges, and factors influencing compensation in the IT industry.

To achieve this, we gathered relevant data from multiple sources, including online job portals, industry surveys, recruitment agencies, and publicly available information. We then cleaned and prepared the data, ensuring consistency, removing duplicates, and handling missing values. Using Tableau, a powerful data visualisation tool, we analysed the data and generated visualisations and interactive dashboards to present meaningful insights.

Our analysis included the classification of different IT roles based on job titles, job roles, companies, salary, and rating. We performed an in-depth salary analysis, identifying trends,

ranges, and potential outliers. We also developed dashboards and stories using Tableau, allowing users to explore and filter the data according to their specific requirements.

The findings of our analysis provided valuable information for various stakeholders. HR departments and recruitment agencies can use this information for talent acquisition and salary benchmarking. Job seekers can gain insights into salary trends and market demand for specific roles. Researchers and analysts can utilise the data for industry research and workforce planning. Companies can gain competitive intelligence and inform their business strategies.

While the proposed solution offers several advantages, such as comprehensive data coverage and valuable insights, there are also challenges to consider. Data collection can be time-consuming and may face data quality and consistency issues. Data cleaning and preparation can be complex and prone to errors. Data analysis requires advanced skills and interpretation of complex visualisations.

Despite these challenges, the proposed solution has wide-ranging applications. It can be used in areas such as human resources and talent acquisition, job seekers and career planning, industry research and analysis, workforce planning and skill development, market intelligence and competitive analysis, and business strategy and decision-making.

Overall, this project provides a robust framework for analysing IT sector salaries and roles, enabling stakeholders to make informed decisions and gain valuable insights into the dynamic IT job market.

## 10. FUTURE SCOPE

Some of the enhancements that can be made in the future to further improve the analysis of IT sector salaries and roles are

#### **Expand Data Sources:**

Explore additional data sources such as professional networking platforms, company websites, and government databases to gather a more comprehensive dataset. This can provide a broader perspective on the IT job market and enhance the accuracy of the analysis.

#### **Include Employee Benefits and Perks:**

Extend the analysis to include information about employee benefits, perks, and work culture. This can provide a more holistic view of job satisfaction and help individuals assess the overall attractiveness of different IT roles and companies.

#### **Incorporate Time Series Analysis:**

Apply time series analysis techniques to identify salary trends over time. This can help in understanding the impact of economic factors, industry advancements, and market conditions on IT sector salaries.

#### **Improve Role Classification:**

Refine the role classification process by incorporating natural language processing (NLP) techniques to extract and analyse job descriptions. This can provide a more accurate categorization of IT roles and facilitate more detailed analysis.

#### **Conduct Industry-Specific Analysis:**

Focus on specific industries within the IT sector, such as healthcare, finance, or e-commerce, to uncover industry-specific salary trends, skill requirements, and job opportunities. This can provide targeted insights for professionals and organisations operating in these industries.

#### **Incorporate Geospatial Analysis:**

Integrate geospatial analysis techniques to visualise and analyse salary distributions and job opportunities on a geographic map. This can help individuals identify regions with high demand for specific IT roles and potentially higher salary prospects.

#### **Include Demographic Analysis:**

Consider incorporating demographic analysis, such as gender or ethnicity, to assess any potential wage gaps or disparities within the IT sector. This can help in promoting diversity and equality in the industry.

## **Develop a Real-Time Data Dashboard:**

Create a real-time data dashboard that continuously updates with the latest salary and job market information. This can provide users with up-to-date insights and enable them to stay informed about the dynamic IT sector.

## 11. BIBLIOGRAPHY

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https://en.wikipedia.org/wiki/List of Indian IT companies

https://en.wikipedia.org/wiki/List\_of\_largest\_companies\_by\_revenue

## **APPENDIX A**

#### index.html

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         <div class="icon"><i class="bi bi-credit-card-2-front" style="color: ■#41cf2e;">
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          Heat map depicting different job roles ,employment status
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       <div class="icon-box">
         <div class="icon"><i class="bi bi-globe" style="color: =#d6ff22;"></i></div>
          <h4 class="title"><a href="">Bar Graph</a></h4
          Giving information about different job roles in different
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          <h4 class="title"><a href="">For more info...</a></h4>
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    <div class="container">
     <h2 style="color: ☐ tomato;">Story</h2>
      \ensuremath{\mathsf{CP}}\xspace A flow of visualizations which will enable the viewers to analyze which job role
```

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     Meet our wonderful team comprising of four tech enthusiasts who have actively play
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             <a href=""><i class="bi bi-linkedin"></i></a>
         <div class="member-info">
           <h4>Aishwarya Ganesh Shankar</h4>
           <span>20BCE2629</span>
       <div class="member">
         <div class="member-img">
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