📄 **Capstone Project Report Structure**

1. **Title Page**
   * Project Title: *Gender Prediction Using Dental Metrics*
   * Name: *Rutuja Krishna Yadav*
   * Course: *Data Science*
   * Date: March 2025
2. **Objective**

To predict gender using dental measurements through machine learning models in the context of forensic dentistry.

1. **Background**

Forensic dentistry helps identify gender in situations where only dental records remain. Machine learning offers powerful tools to automate this analysis.

1. **Dataset Description**
   * Features: Age, gender, various dental measurements
   * Target: Gender (Male/Female)
   * Size: 9,000+ records (example)
2. **Tools & Technologies Used**
   * Python, Pandas, NumPy, Seaborn, Matplotlib, Scikit-learn, XGBoost, Jupyter/Colab
3. **Steps Followed**
   * Data Collection
   * Data Cleaning & Preprocessing (Missing values, Encoding)
   * EDA (Heatmap, Correlations)
   * Feature Scaling (Normalization)
   * Model Building (Logistic Regression, Decision Tree, Random Forest, XGBoost)
   * Model Evaluation (Confusion Matrix, Accuracy, ROC-AUC)
4. **Results**

Random Forest and XGBoost performed best with high accuracy and AUC.

1. **Conclusion**

Dental metrics can effectively classify gender using machine learning, aiding forensic identification.

1. **Screenshots (Optional)**
   * Add model accuracy results, graphs, ROC curves, etc.
2. **References (Optional)**

scikit-learn documentation, Kaggle datasets, research papers (if any)

**✅ Resume & LinkedIn Short Descriptions**

**Resume:**

Built a machine learning model for gender prediction using dental metrics. Applied EDA, normalization, and classification algorithms (RF, XGB). Evaluated models using AUC and confusion matrix.

**LinkedIn:**

Created a forensic-focused ML project to predict gender from dental features. Implemented Logistic Regression, Decision Trees, and Random Forests; visualized performance with ROC-AUC and achieved high classification accuracy