

PERSONALIZED HEALTHCARE RECOMMENDATIO NS

PROJECT REPORT BASED ON PATIENT ADMISSION DATASET



I. OBJECTIVE

- Develop a model that provides personalized healthcare suggestions.
- Use patient demographics, diagnosis, and hospital records.

2. DATASET DESCRIPTION

- Includes fields: Age, Gender, Blood Type, Condition, Admission Type, etc.
- Target variables: Medication or Test Results.

3. DATA EXPLORATION

- Distribution of conditions like Cancer, Obesity, Diabetes.
- Billing amount varies across conditions and urgency.
- Balanced gender; mixed admission types.

4. DATA PREPROCESSING

- Normalized names and encoded categorical variables.
- Calculated Length of Stay and Condition Cost Index.
- Converted dates to datetime format.

5. FEATURE ENGINEERING

- Derived features: Length of Stay, Season of Admission.
- Analyzed feature importance using tree-based methods.

6. MODEL TRAINING

- Used Random Forest Classifier for best results.
- Target: Medication or Test Results.
- Other models: Logistic Regression, XGBoost, SVM.

7. MODEL EVALUATION

- Medication Prediction Accuracy: ~85%
- Test Results ROC AUC: 0.91
- F1-score: 0.83 (medication)

8. RECOMMENDATIONS

- Mapped predictions to clinical actions.
- Example: Diabetes + Abnormal Result = Specialist follow-up
- Integrated cost and length of stay into recommendations.

9. DEPLOYMENT (OPTIONAL)

- Flask/Streamlit web app for real-time inputs.
- User-friendly forms for doctors/patients.

10. INSIGHTS

- High billing and abnormal results = urgent follow-up.
- Length of stay linked to test outcomes.
- Billing is a good severity proxy.

II. ETHICAL CONSIDERATIONS

- Do not replace human decision-making.
- Ensure patient data privacy.
- Avoid algorithmic bias in recommendations.

I 2. FUTURE WORK

- Add more health history & wearable data.
- Use Explainable AI (LIME, SHAP).
- Deploy as scalable health advisor system.

THANKYOU !
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