**📋PROJECT MODULES STATUS UPDATE**

**Module 1: Data Preparation & Backend Setup**

* **Task 1: Dataset Cleaning** (handle missing values, normalize categories) = ✅.
* **Task 2: Feature Engineering** (condition-to-drug mapping, patient history) = ✅.
* **Task 3: Model Input Pipeline** (train/test split, preprocessing pipeline) = ✅.

➡️ **Endpoint 1: Drug Recommendation Service**

* **Input**: Patient’s medical record (age, condition, symptoms) = ✅.
* **Output**: Suggested drug(s) with confidence score = ✅.

**Module 2: Knowledge & Query Processing**

* **Task 4: NLP Query Integration**
  + Enable users to ask in natural language, e.g., *“What drug is recommended for hypertension?” =* ✅.
* **Task 5: Database Integration**
  + Connect to structured medical knowledgebase (wandb.ai) = ✅.

➡️ **Endpoint 2: Query-to-Drug Recommendation**

* **Input**: Natural language query.
* **Output**: Drug name(s), dosage range, and explanation.

**Module 3: Model Training & Evaluation**

* **Task 6: Train ML Models**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Model/**  **Metrics** | **🤝KNeighbors** | **🌲🌲🌲 Random Forest** | **🎲MultinomialNB** | ⚖ **Support Vector Classifier (SVC) 🏆** |
| **🎯Accuracy** | 95.65% | ✅100% | 83.70% | ✅100% |
| **📏Precision** | 93.92% | ✅100% | 81.16% | ✅100% |
| **🔁Recall** | 97.30% | ✅100% | 87.84% | ✅100% |
| **💡F1-Score** | 94.77% | ✅100% | 82.35% | ✅100% |

* + Compare KNeighbors, Random Forest, MultinomialNB, Gradient Boosting, and SVC= ✅.
* **Task 7: Model Evaluation**
  + Use precision, recall, F1-score to evaluate = ✅.

➡️ **Endpoint 3: Predictive Recommendation**

* **Input**: Patient structured profile.
* **Output**: Top-N recommended drugs.

**Module 4: Frontend & Integration**

* **Frontend Page 1:** Patient Form (enter patient details → get drug recommendation) = ✅.
* **Frontend Page 2:** Search Interface (type condition → recommended drug list) = ✅.
* **Frontend Page 3:** Results Visualization (charts, dosage insights) = ✅.

**Tech Stack**

* **Backend**: Flask / Fast API/ Stream lit = ✅.
* **ML Models**: Scikit-learn, XGBoost, Pytorch (optional) = ✅.
* **Database**: SQLite / PostgreSQL (structured data), Pinecone for embeddings, or MongoDB = ✅.
* **Visualization**: Power BI, Matplotlib, Seaborn = ✅.
* **Frontend**: Flask templates = ✅.

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**🔗 GitHub:** ***Completed 💯***