**GISAT\_Plus Readme**

**Overview**

GISAT\_Plus (Gap Identification System Analysis Tool) is a modern GUI Python application designed for mining health data from the Electronic Medical Record (EMR) system known as the Nigeria Medical Record System (NMRS). Developed as a version of OpenMRS tailored for Nigeria, NMRS is a crucial tool for healthcare data management in the country. GISAT\_Plus seamlessly connects to the MySQL engine of NMRS, allowing healthcare professionals to automatically generate patient line lists for detailed reports. With a sleek and intuitive interface, GISAT\_Plus empowers users to leverage over 650 patient-level data components for in-depth analysis and reporting.

**Features**

* **Data Mining**: Automatically generates patient line lists for various reports, including:
  + **HIV Treatment Line List**: Provides comprehensive data on patients undergoing HIV treatment, including medication regimens, treatment outcomes, and follow-up visits.
  + **HIV Testing Services Line List**: Offers insights into HIV testing services, including testing frequency and results, facilitating targeted interventions for HIV prevention and treatment.
  + **Full Pharmacy Complement**: Delivers patient-level pharmacy details, including information on the Decentralized Service Delivery Model (DSD) and Multi Month Dispensing (MMD), enhancing medication management and adherence monitoring.
  + **PMTCT Line List (Prevention of Mother to Child Transmission)**: Focuses on tracking interventions aimed at preventing the transmission of HIV from mother to child, supporting maternal and child health initiatives.
  + **EID Line List (Early Infant Diagnosis)**: Provides data on early HIV diagnosis in infants, enabling timely intervention and treatment to improve health outcomes.
  + **AHD Line List (Advanced HIV Disease)**: Offers insights into patients with advanced HIV disease, facilitating targeted healthcare interventions and support services.
  + **LIMS\_EMR Daily Report**: Compares data from the Laboratory Information Management System with EMR data, enabling comprehensive analysis and quality assurance.
  + **HIV-COVID\_19 Line List**: Tracks patients affected by both HIV and COVID-19, supporting coordinated healthcare efforts during public health emergencies.
  + **Last 5 Pharmacy**: Provides details of the last five drug refills for each patient, aiding in medication management and adherence monitoring.
  + **OTZ Line List (Operation Triple Zero)**: Focuses on initiatives aimed at achieving zero new HIV infections, zero AIDS-related deaths, and zero discrimination, supporting HIV prevention and treatment programs.
  + **Mobile HTS Tracker**: Monitors the usage of Mobile NMRS for HIV testing services, optimizing resource allocation and improving access to healthcare.
  + **NCD Line List (Non-Communicable Diseases)**: Provides insights into the prevalence and management of non-communicable diseases among patients, supporting comprehensive healthcare delivery.
  + **PBS Line List (Patient Biometrics System)**: Delivers patient-level biometric details for identification and tracking purposes, enhancing patient care and security.
  + **Client Tracking and Discontinuation**: Helps track interruptions in treatment and identify patients at risk of discontinuing healthcare services, supporting continuity of care initiatives.
  + **Regency Standalone List**: Offers standalone reports tailored to specific requirements, providing flexibility in data analysis and reporting.
  + **Nutritional Status List**: Provides data on the nutritional status of patients, facilitating targeted interventions and support services.
* **Database Connectivity**: Utilizes SQL Stored procedures created using Python libraries such as sqlalchemy, mysql.connector, and pymysql to interact with the MySQL engine of NMRS, ensuring efficient data retrieval and processing.
* **Data Security and Confidentiality**: Ensures health data security and confidentiality by fetching extracted data into an encrypted Excel workbook using Python libraries like pandas, openpyxl, and win32com.client, safeguarding sensitive patient information.
* **Error Detection**: Detects data errors and inconsistencies, such as incomplete data and missing fields, enhancing data quality and reliability for informed decision-making in healthcare delivery.
* **Data Integration**: Capable of merging patient-level line list considering all data validation rules across different health facilities, local governments, and states, facilitating comprehensive data analysis and reporting for improved healthcare outcomes.

**Data Components of Each Line List**

Each line list generated by GISAT\_Plus comprises detailed patient-level data components tailored to specific healthcare needs, including:

* Demographic information (e.g., age, gender, location)
* Clinical indicators (e.g., diagnosis date, treatment regimen)
* Laboratory results (e.g., viral load measurements, CD4 cell count)
* Medication details (e.g., drug refills, adherence indicators)
* Service utilization (e.g., follow-up visits, testing frequency)