PROJECT DESIGN PHASE-I

SOLUTION ARCHITECTURE

Date	30 September 2022
Team ID	PNT2022TMID15455
Project Name	Early Detection of Chronic Kidney Disease using Machine Learning
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Nanoparticle-based magnetic resonance imaging (MRI) is the best tech solution to detect early Chronic Kidney Diseases. As it is in development stage, we use machine learning algorithms.
- First, we apply class balancing in order to tackle the non-uniform distribution, then feature ranking and analysis are performed, and finally, several ML models are trained and evaluated based on various performance metrics to find a solution with a higher accuracy.
- Development phases:
    - Step 1: Data pre-processing.
    - Step 2: Features Analysis.
    - Step 3: Comparative Evaluation of various models.
    - Step 4: Performance Evaluation.
- Requirements: A dataset of people who are diagnosed with kidney failure with the attributes like Diastolic Blood Pressure, Albumin level, Glucose, Blood Urea, Serum Creatinine, Sodium, Potassium, etc.
- Based on the past specifications of Chronic Kidney Disease prediction analysis.

Example - Solution Architecture Diagram:

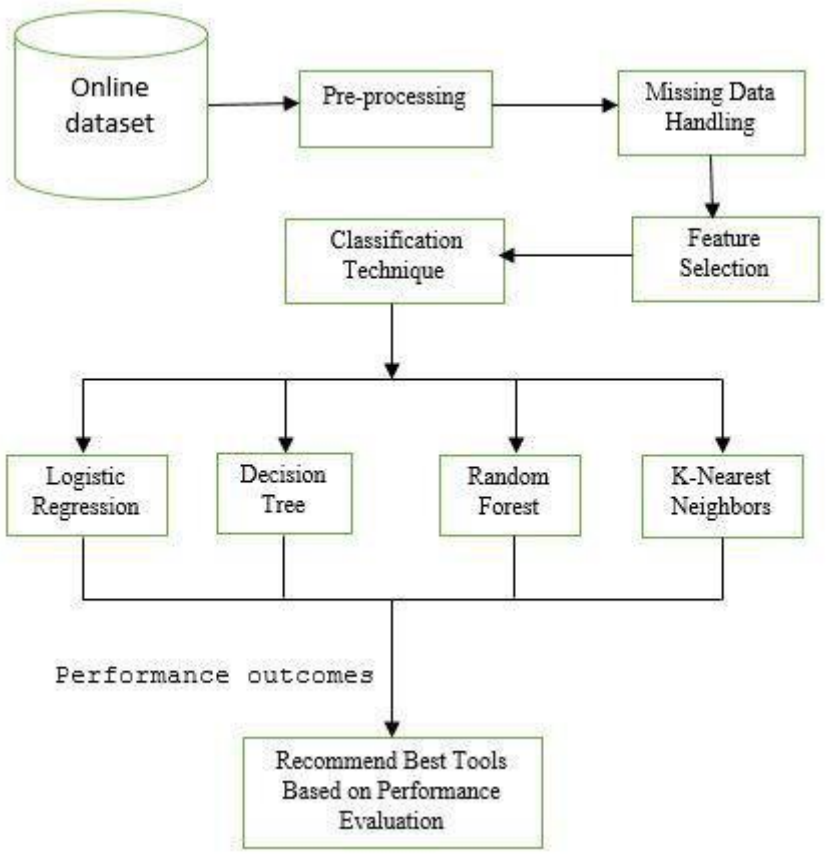

Figure 1: Architecture and data flow of the Early Chronic Kidney Disease Prediction.

Reference: https://www.researchgate.net/figure/Functional-Blocks-of-kidney-disease-prediction-System-B-Evaluation-Criteria-on_fig1_347816558