Model Development Phase

Date	18 June 2025
Team ID	SWTID1749620488
Project Title	Early Prediction for Chronic Kidney Disease Detection: A Progressive Approach to Health Management
Maximum Marks	5 Marks

Feature Selection Report

Feature	Description	Selected (Yes/No)	Reasoning
Id	Unique identifier for each patient	No	For predicting CKD, Id is not required.
age	Age of the patient in years	Yes	Age is a crucial factor as CKD risk increases with age.
blood_pressure(bp)	Diastolic blood pressure measurement	Yes	High blood pressure is a known risk factor and indicator for CKD.
specific_gravity(sg)	Concentration of urine, indicating kidney filtering ability	Yes	Reflects the kidney's ability to concentrate urine, which is directly related to its functioning.

albumin(al)	Amount of albumin protein in the urine	Yes	A key indicator of kidney damage, especially in early stages.
sugar(su)	Glucose level in urine	Yes	High sugar levels may suggest diabetic nephropathy, a major cause of CKD.
red_blood_cells(rbc)	Presence of RBCs in urine	Yes	May indicate kidney damage or inflammation.
pus_cell(pc)	White blood cells in urine	Yes	Presence indicates infection or inflammation in the urinary tract or kidneys.
pus_cell_clamps(pcc)	Clumps of pus cells in urine	Yes	Suggests severe infection; helpful in diagnosing underlying causes of CKD.
bacteria(ba)	Presence of bacteria in urine	Yes	It indicates infection, which directly links to CKD progression in some cases.
blood_glucose_ranom (bgr)	Random blood glucose levels	Yes	Diabetes is a major cause of CKD; glucose levels provide essential context.
blood_urea(bu)	Urea level in blood	Yes	Elevated blood urea levels indicate impaired kidney function.
serum_creatinine(sc)	Creatinine level in the blood	Yes	A key indicator of kidney filtration performance; higher levels imply dysfunction.
sodium(sod)	Sodium concentration in the blood	Yes	Important for fluid balance; kidney dysfunction can affect sodium levels.

potassium(pot)	Potassium concentration in the blood	Yes	Kidney issues may result in abnormal potassium levels, affecting heart and muscle function.
hemoglobin(hemo)	Amount of hemoglobin in blood	Yes	Low hemoglobin may indicate anemia caused by kidney disease.
packed_cell_volume (pcv)	Percentage of blood volume occupied by red blood cells	Yes	Helpful in detecting anemia, which often accompanies CKD.
white_blood_cell_count (wc)	WBC count in the blood	Yes	Indicates infection or inflammation, which may relate to CKD.
red_blood_cell_count (rc)	RBC count in the blood	Yes	Low RBC count can be associated with anemia due to kidney disease.
hypertension (htn)	Presence of high blood pressure	Yes	Hypertension is both a cause and effect of CKD.
diabetesmellitus(dm)	Presence of diabetes	Yes	A primary risk factor for CKD.
coronary_artery_disease (cad)	Presence of heart-related disease	Yes	Cardiovascular diseases often coexist with CKD and may influence progression and outcomes.
appetite(appet)	Patient's appetite condition	Yes	Loss of appetite can be a symptom of worsening kidney function.
pedal_edema(pe)	Swelling of feet and ankles	Yes	Common symptom due to fluid retention in CKD.

anemia(ane)	Presence of anemia	Yes	Anemia is frequently associated with chronic kidney failure.
class(classification)	Diagnosis of CKD (target variable)	Yes	Target label for classification – essential for model training.