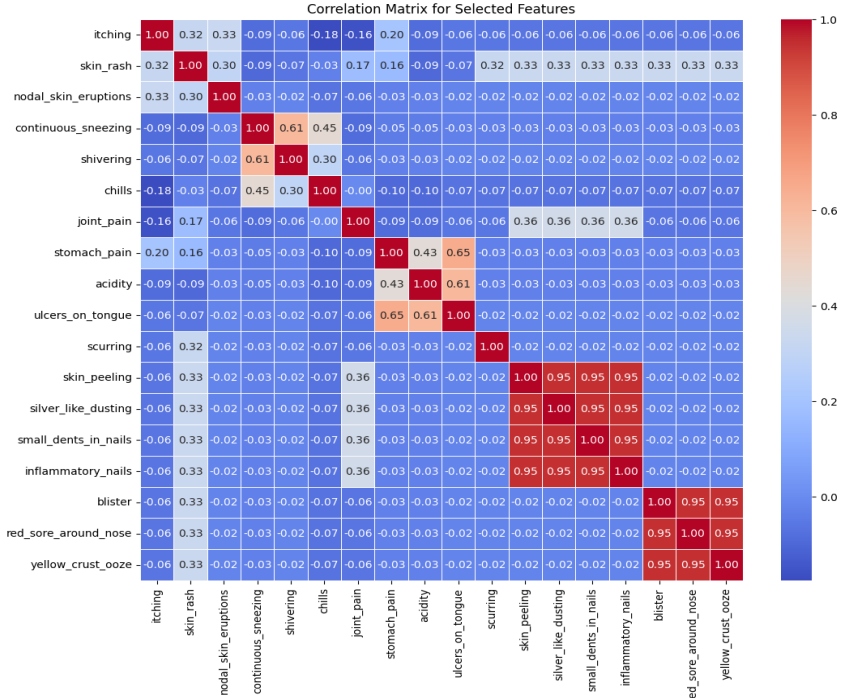


Project Development Phase Model Performance Test

Date	4 November 2023
Team ID	Team-592881
Project Name	Disease Prediction Using Machine Learning
Maximum Marks	10 Marks

Model Performance Testing:

S.No	Parameter	Values	Screenshot
1.	Metrics	Classification Model: Confusion Matrix	 <p>Correlation Matrix for Selected Features</p> <p>itching - 1.00 0.32 0.33 -0.09 -0.06 -0.18 0.16 0.20 -0.09 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06 -0.06</p> <p>skin_rash - 0.32 1.00 0.30 -0.09 -0.07 -0.03 0.17 0.16 -0.09 -0.07 0.32 0.33 0.33 0.33 0.33 0.33 0.33 0.33 0.33 0.33</p> <p>nodal_skin_eruptions - 0.33 0.30 1.00 -0.03 -0.02 0.07 0.06 -0.03 -0.03 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02</p> <p>continuous_sneezing - -0.09 -0.09 -0.03 1.00 0.61 0.45 0.09 -0.05 -0.05 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03</p> <p>shivering - -0.06 -0.07 -0.02 0.61 1.00 0.30 0.06 -0.03 -0.03 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02</p> <p>chills - -0.18 -0.03 -0.07 0.45 0.30 1.00 0.00 -0.10 -0.10 -0.07 -0.07 -0.07 -0.07 -0.07 -0.07 -0.07 -0.07 -0.07 -0.07 -0.07</p> <p>joint_pain - -0.16 0.17 -0.06 -0.09 -0.06 -0.00 1.00 -0.09 -0.09 -0.06 -0.06 0.36 0.36 0.36 0.36 -0.06 -0.06 -0.06 -0.06 -0.06</p> <p>stomach_pain - 0.20 0.16 -0.03 -0.05 -0.03 -0.10 -0.09 1.00 0.43 0.65 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03</p> <p>acidity - -0.09 -0.09 -0.03 -0.05 -0.03 -0.10 -0.09 0.43 1.00 0.61 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03 -0.03</p> <p>ulcers_on_tongue - -0.06 -0.07 -0.02 -0.03 -0.02 -0.07 -0.06 0.65 0.61 1.00 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02</p> <p>scurring - -0.06 0.32 -0.02 -0.03 -0.02 -0.07 -0.06 -0.03 -0.03 -0.02 1.00 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02</p> <p>skin_peeling - -0.06 0.33 -0.02 -0.03 -0.02 -0.07 0.36 -0.03 -0.03 -0.02 0.95 1.00 0.95 0.95 0.95 -0.02 -0.02 -0.02 -0.02 -0.02</p> <p>silver_like_dusting - -0.06 0.33 -0.02 -0.03 -0.02 -0.07 0.36 -0.03 -0.03 -0.02 0.95 1.00 0.95 0.95 0.95 -0.02 -0.02 -0.02 -0.02 -0.02</p> <p>small_dents_in_nails - -0.06 0.33 -0.02 -0.03 -0.02 -0.07 0.36 -0.03 -0.03 -0.02 0.95 0.95 1.00 0.95 0.95 -0.02 -0.02 -0.02 -0.02 -0.02</p> <p>inflammatory_nails - -0.06 0.33 -0.02 -0.03 -0.02 -0.07 0.36 -0.03 -0.03 -0.02 0.95 0.95 0.95 1.00 -0.02 -0.02 -0.02 -0.02 -0.02</p> <p>blister - -0.06 0.33 -0.02 -0.03 -0.02 -0.07 0.06 -0.03 -0.03 -0.02 -0.02 -0.02 -0.02 -0.02 1.00 0.95 0.95 -0.02 -0.02</p> <p>red_sore_around_nose - -0.06 0.33 -0.02 -0.03 -0.02 -0.07 0.06 -0.03 -0.03 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 1.00 0.95 -0.02 -0.02</p> <p>yellow_crust_ooze - -0.06 0.33 -0.02 -0.03 -0.02 -0.07 0.06 -0.03 -0.03 -0.02 -0.02 -0.02 -0.02 -0.02 -0.02 0.95 0.95 1.00 -0.02 -0.02</p>
		Accuracy Score	Training Accuracy: 0.9128556910569106 Validation Accuracy: 0.9034552845528455 Testing Accuracy: 0.9047619047619048

		Classification Report	<div>Classification Report - Testing Set:</div> <table><thead><tr><th></th><th>precision</th><th>recall</th><th>f1-score</th><th>support</th></tr></thead><tbody><tr><td>(vertigo) Paroymsal</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>AIDS</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Acne</td><td>0.00</td><td>0.00</td><td>0.00</td><td>1</td></tr><tr><td>Alcoholic hepatitis</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Allergy</td><td>0.00</td><td>0.00</td><td>0.00</td><td>1</td></tr><tr><td>Arthritis</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Bronchial Asthma</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Cervical spondylosis</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Chicken pox</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Chronic cholestasis</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Common Cold</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Dengue</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Diabetes</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Dimorphic hemmorhoids(piles)</td><td>0.25</td><td>1.00</td><td>0.40</td><td>1</td></tr><tr><td>Drug Reaction</td><td>0.50</td><td>1.00</td><td>0.67</td><td>1</td></tr><tr><td>Fungal infection</td><td>1.00</td><td>0.50</td><td>0.67</td><td>2</td></tr><tr><td>GERD</td><td>0.50</td><td>1.00</td><td>0.67</td><td>1</td></tr><tr><td>Gastroenteritis</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Heart attack</td><td>0.00</td><td>0.00</td><td>0.00</td><td>1</td></tr><tr><td>Hepatitis B</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Hepatitis C</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Hepatitis D</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Hepatitis E</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Hypertension</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Hyperthyroidism</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Hypoglycemia</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Hypothyroidism</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Impetigo</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Jaundice</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Malaria</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Migraine</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Osteoarthritis</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Paralysis (brain hemorrhage)</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Peptic ulcer diseae</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Pneumonia</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Psoriasis</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Tuberculosis</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Typhoid</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>Urinary tract infection</td><td>0.00</td><td>0.00</td><td>0.00</td><td>1</td></tr><tr><td>Varicose veins</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>hepatitis A</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1</td></tr><tr><td>accuracy</td><td></td><td></td><td>0.88</td><td>42</td></tr><tr><td>macro avg</td><td>0.86</td><td>0.89</td><td>0.86</td><td>42</td></tr><tr><td>weighted avg</td><td>0.86</td><td>0.88</td><td>0.86</td><td>42</td></tr></tbody></table>		precision	recall	f1-score	support	(vertigo) Paroymsal	1.00	1.00	1.00	1	AIDS	1.00	1.00	1.00	1	Acne	0.00	0.00	0.00	1	Alcoholic hepatitis	1.00	1.00	1.00	1	Allergy	0.00	0.00	0.00	1	Arthritis	1.00	1.00	1.00	1	Bronchial Asthma	1.00	1.00	1.00	1	Cervical spondylosis	1.00	1.00	1.00	1	Chicken pox	1.00	1.00	1.00	1	Chronic cholestasis	1.00	1.00	1.00	1	Common Cold	1.00	1.00	1.00	1	Dengue	1.00	1.00	1.00	1	Diabetes	1.00	1.00	1.00	1	Dimorphic hemmorhoids(piles)	0.25	1.00	0.40	1	Drug Reaction	0.50	1.00	0.67	1	Fungal infection	1.00	0.50	0.67	2	GERD	0.50	1.00	0.67	1	Gastroenteritis	1.00	1.00	1.00	1	Heart attack	0.00	0.00	0.00	1	Hepatitis B	1.00	1.00	1.00	1	Hepatitis C	1.00	1.00	1.00	1	Hepatitis D	1.00	1.00	1.00	1	Hepatitis E	1.00	1.00	1.00	1	Hypertension	1.00	1.00	1.00	1	Hyperthyroidism	1.00	1.00	1.00	1	Hypoglycemia	1.00	1.00	1.00	1	Hypothyroidism	1.00	1.00	1.00	1	Impetigo	1.00	1.00	1.00	1	Jaundice	1.00	1.00	1.00	1	Malaria	1.00	1.00	1.00	1	Migraine	1.00	1.00	1.00	1	Osteoarthritis	1.00	1.00	1.00	1	Paralysis (brain hemorrhage)	1.00	1.00	1.00	1	Peptic ulcer diseae	1.00	1.00	1.00	1	Pneumonia	1.00	1.00	1.00	1	Psoriasis	1.00	1.00	1.00	1	Tuberculosis	1.00	1.00	1.00	1	Typhoid	1.00	1.00	1.00	1	Urinary tract infection	0.00	0.00	0.00	1	Varicose veins	1.00	1.00	1.00	1	hepatitis A	1.00	1.00	1.00	1	accuracy			0.88	42	macro avg	0.86	0.89	0.86	42	weighted avg	0.86	0.88	0.86	42
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2.	Tune the Model	Hyperparameter Tuning	<div>Best Hyperparameters: {'n_neighbors': 7, 'p': 1, 'weights': 'distance'}</div> <div>RFC_feature_importances = pd.DataFrame(RFC.feature_importances_, index=X_train.columns, columns=['Importance']).sort_values('Importance', ascending=False)</div> <div>knn_model = KNeighborsClassifier(n_neighbors=5) knn_model.fit(X_train1, y_train1) y_train_pred1 = knn_model.predict(X_train1) y_val_pred1 = knn_model.predict(X_val1) y_test_pred1 = knn_model.predict(X_test1)</div>																																																																																																																																																																																																																																	
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3.	Accuracy	Training Accuracy – 91.28 Validation Accuracy – 90.47	Training Accuracy: 0.9128556910569106 Validation Accuracy: 0.9034552845528455 Testing Accuracy: 0.9047619047619048
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