OG DATA

Rows in medications: 9566

Rows in observations: 12352

Rows in patients: 12352

Rows in allergies: 1528

Rows in conditions: 12165

Rows in immunizations: 10376

Rows in final merged dataset: 12352

A comparison of a bar graph

Description automatically generated

Epoch 1/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **42s** 56ms/step - accuracy: 0.8133 - loss: 4.1601 - val\_accuracy: 0.9317 - val\_loss: 1.6297

Epoch 2/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.8934 - loss: 1.3181 - val\_accuracy: 0.9575 - val\_loss: 1.0007

Epoch 3/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **38s** 56ms/step - accuracy: 0.9074 - loss: 1.2493 - val\_accuracy: 0.9601 - val\_loss: 0.8479

Epoch 4/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9146 - loss: 1.1558 - val\_accuracy: 0.9538 - val\_loss: 0.7921

Epoch 5/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **38s** 56ms/step - accuracy: 0.9226 - loss: 1.0786 - val\_accuracy: 0.9511 - val\_loss: 0.8875

Epoch 6/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9242 - loss: 0.9929 - val\_accuracy: 0.9559 - val\_loss: 0.8083

Epoch 7/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **38s** 57ms/step - accuracy: 0.9306 - loss: 0.8326 - val\_accuracy: 0.9620 - val\_loss: 0.6542

Epoch 8/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9349 - loss: 0.7630 - val\_accuracy: 0.9601 - val\_loss: 0.6134

Epoch 9/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9329 - loss: 0.7679 - val\_accuracy: 0.9657 - val\_loss: 0.6329

Epoch 10/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9353 - loss: 0.6992 - val\_accuracy: 0.9655 - val\_loss: 0.5952

Epoch 11/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9376 - loss: 0.6593 - val\_accuracy: 0.9562 - val\_loss: 0.6961

Epoch 12/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9374 - loss: 0.6560 - val\_accuracy: 0.9673 - val\_loss: 0.6291

Epoch 13/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9375 - loss: 0.6508 - val\_accuracy: 0.9690 - val\_loss: 0.5384

Epoch 14/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9405 - loss: 0.5895 - val\_accuracy: 0.9747 - val\_loss: 0.4694

Epoch 15/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **41s** 61ms/step - accuracy: 0.9407 - loss: 0.5929 - val\_accuracy: 0.9710 - val\_loss: 0.5726

Epoch 16/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **41s** 60ms/step - accuracy: 0.9375 - loss: 0.6395 - val\_accuracy: 0.9688 - val\_loss: 0.5212

Epoch 17/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **41s** 61ms/step - accuracy: 0.9397 - loss: 0.5912 - val\_accuracy: 0.9664 - val\_loss: 0.4692

Epoch 18/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 58ms/step - accuracy: 0.9400 - loss: 0.5873 - val\_accuracy: 0.9682 - val\_loss: 0.4422

Epoch 19/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9413 - loss: 0.5916 - val\_accuracy: 0.9727 - val\_loss: 0.5422

Epoch 20/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **38s** 57ms/step - accuracy: 0.9402 - loss: 0.6010 - val\_accuracy: 0.9649 - val\_loss: 0.4918

Epoch 21/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **38s** 56ms/step - accuracy: 0.9427 - loss: 0.5801 - val\_accuracy: 0.9655 - val\_loss: 0.5072

Epoch 22/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **38s** 57ms/step - accuracy: 0.9432 - loss: 0.5550 - val\_accuracy: 0.9705 - val\_loss: 0.4665

Epoch 23/50

**677/677** ━━━━━━━━━━━━━━━━━━━━ **39s** 57ms/step - accuracy: 0.9435 - loss: 0.5366 - val\_accuracy: 0.9620 - val\_loss: 0.4540

**212/212** ━━━━━━━━━━━━━━━━━━━━ **2s** 10ms/step - accuracy: 0.9696 - loss: 0.4432

Test Loss: 0.4423690438270569, Test Accuracy: 0.9676561951637268

**212/212** ━━━━━━━━━━━━━━━━━━━━ **2s** 8ms/step

Classification Report:

precision recall f1-score support

0 1.00 0.99 1.00 1692

1 0.99 0.97 0.98 1672

2 0.97 0.91 0.94 1722

3 0.92 0.99 0.95 1685

accuracy 0.97 6771

macro avg 0.97 0.97 0.97 6771

weighted avg 0.97 0.97 0.97 6771

A blue squares with numbers and a graph

Description automatically generated with medium confidence

**78/78** ━━━━━━━━━━━━━━━━━━━━ **1s** 10ms/step - accuracy: 0.9666 - loss: 0.4888

Original Test Loss: 0.49169352650642395, Original Test Accuracy: 0.9668150544166565

**78/78** ━━━━━━━━━━━━━━━━━━━━ **1s** 7ms/step

Original Test Set Classification Report:

precision recall f1-score support

0 0.94 0.97 0.95 74

1 0.99 0.96 0.98 387

2 0.92 0.82 0.87 297

3 0.97 0.99 0.98 1713

accuracy 0.97 2471

macro avg 0.95 0.94 0.94 2471

weighted avg 0.97 0.97 0.97 2471

A graph with numbers and a blue square

Description automatically generated with medium confidence

Feature Importance (from first layer weights):

AGE\_patients: 0.06850088387727737

MAIDEN\_patients: 0.068192258477211

DESCRIPTION\_1 ML DOCEtaxel 20 MG/ML Injection\_medications: 0.057913437485694885

DESCRIPTION\_1 ML denosumab 60 MG/ML Prefilled Syringe\_medications: 0.04275355860590935

DESCRIPTION\_1 ML heparin sodium porcine 5000 UNT/ML Injection\_medications: 0.04208173230290413

DESCRIPTION\_1 ML Vasopressin (USP) 20 UNT/ML Injection\_medications: 0.04117259755730629

DESCRIPTION\_0.3 ML Enoxaparin sodium 100 MG/ML Prefilled Syringe\_medications: 0.038749728351831436

DESCRIPTION\_1 ML medroxyprogesterone acetate 150 MG/ML Injection\_medications: 0.037595462054014206

DESCRIPTION\_100 ML Epirubicin Hydrochloride 2 MG/ML Injection\_medications: 0.03656566143035889

DESCRIPTION\_10 ML Pamidronate Disodium 3 MG/ML Injection\_medications: 0.03529490903019905

Top Features Correlated with Labels:

Fibrin D-dimer FEU [Mass/volume] in Platelet poor plasma\_observations: 0.3671326869001092

Adenovirus A+B+C+D+E DNA [Presence] in Respiratory specimen by NAA with probe detection\_observations: 0.3498076482778162

Human metapneumovirus RNA [Presence] in Respiratory specimen by NAA with probe detection\_observations: 0.3498076482778162

Influenza virus A RNA [Presence] in Respiratory specimen by NAA with probe detection\_observations: 0.33997073485202417

Influenza virus B RNA [Presence] in Respiratory specimen by NAA with probe detection\_observations: 0.33790896725134284

DESCRIPTION\_1 ML Vasopressin (USP) 20 UNT/ML Injection\_medications: 0.33540288774599786

DESCRIPTION\_4 ML Norepinephrine 1 MG/ML Injection\_medications: 0.33540288774599786

REASONDESCRIPTION\_Septic shock (disorder)\_medications: 0.33540288774599786

Influenza virus B Ag [Presence] in Nasopharynx by Rapid immunoassay\_observations: 0.3333999810848168

Influenza virus A Ag [Presence] in Nasopharynx by Rapid immunoassay\_observations: 0.33297717974078783