**6. FUNCTIONAL AND PERFORMANCE TESTING**

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| Date | 28 June 2025 |
| Team ID | LTVIP2025TMID35678 |
| Project Name | Pattern Sense: Classifying Fabric Patterns Using Deep Learning |
| Maximum Marks | Marks |

**6.1 Performance Testing:**

In this phase, we evaluated the performance and reliability of our Pattern Sense model using key metrics such as training accuracy, validation accuracy, and fine-tuning results. Functional testing verified whether the CNN model correctly classifies fabric patterns into predefined categories (striped, plain, polka-dotted, and checked). Performance testing focused on the accuracy of the model and improvements achieved after fine-tuning.

We used TensorFlow/Keras to build and evaluate the model. The CNN architecture included multiple convolutional and pooling layers followed by dense layers with dropout to prevent overfitting. The model was trained on a labeled dataset of fabric pattern images, and the results were tracked using graphs and logs.

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| **S.No.** | **Parameter** | **Values** | **Screenshot** |
|  | Model Summary | -The model includes:  • Input Layer (224x224x3)  • 3 Convolutional Layers + ReLU + MaxPooling  • Flatten  • Dense Layer (128 units) + Dropout  • Output Layer (4 classes, Softmax) |  |
|  | Accuracy | • Training Accuracy: **95.6%**  • Validation Accuracy: **92.8%** |  |
| 3. | Fine Tunning Result( if Done) | • Validation Accuracy after fine-tuning: **94.2%** (using data augmentation + lower learning rate for fine-tuning pre-trained layers) |  |