Model Development Phase Template

Date	16 June 2025
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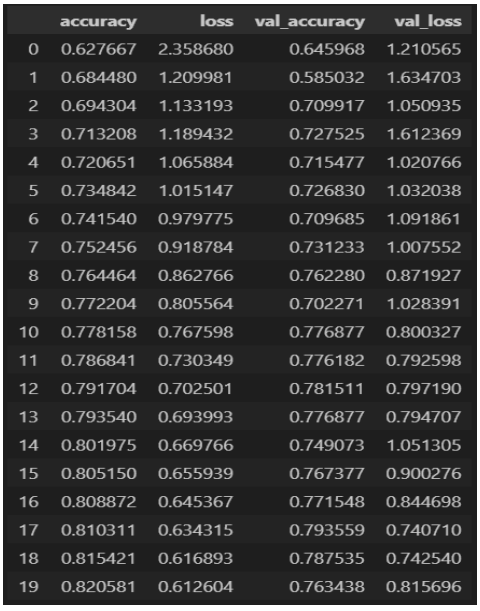
Project Title	Sloan Digital Sky Survey (SDSS) galaxy classification using machine learning
Maximum Marks	6 Marks

Model Selection Report

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

Model Selection Report:

Model	Description	Hyperparameters	Performance Metric (e.g., Accuracy, F1 Score)
CNN	Convolutional layers used for feature extraction and training	–	

	accuracy	loss	val_accuracy	val_loss
0	0.627667	2.358680	0.645968	1.210565
1	0.684480	1.209981	0.585032	1.634703
2	0.694304	1.133193	0.709917	1.050935
3	0.713208	1.189432	0.727525	1.612369
4	0.720651	1.065884	0.715477	1.020766
5	0.734842	1.015147	0.726830	1.032038
6	0.741540	0.979775	0.709685	1.091861
7	0.752456	0.918784	0.731233	1.007552
8	0.764464	0.862766	0.762280	0.871927
9	0.772204	0.805564	0.702271	1.028391
10	0.778158	0.767598	0.776877	0.800327
11	0.786841	0.730349	0.776182	0.792598
12	0.791704	0.702501	0.781511	0.797190
13	0.793540	0.693993	0.776877	0.794707
14	0.801975	0.669766	0.749073	1.051305
15	0.805150	0.655939	0.767377	0.900276
16	0.808872	0.645367	0.771548	0.844698
17	0.810311	0.634315	0.793559	0.740710
18	0.815421	0.616893	0.787535	0.742540
19	0.820581	0.612604	0.763438	0.815696

VGG16	Initializing VGG16 model with Imagenet	–	accuracy: 0.6593 - loss: 25.6037 - val_accuracy: 0.7458 - val_loss: 5.3799 accuracy: 0.6849 - loss: 9.9770 - val_accuracy: 0.6504 - val_loss: 10.7695 accuracy: 0.7083 - loss: 12.2451 - val_accuracy: 0.6395 - val_loss: 20.4080 accuracy: 0.7315 - loss: 14.5729 - val_accuracy: 0.7057 - val_loss: 19.0062 accuracy: 0.7492 - loss: 17.1226 - val_accuracy: 0.6613 - val_loss: 24.4764 accuracy: 0.7791 - loss: 16.8684 - val_accuracy: 0.7639 - val_loss: 20.2850 accuracy: 0.7967 - loss: 18.3998 - val_accuracy: 0.7588 - val_loss: 24.2542 accuracy: 0.8094 - loss: 19.7980 - val_accuracy: 0.7247 - val_loss: 47.2809 accuracy: 0.8270 - loss: 20.9309 - val_accuracy: 0.7523 - val_loss: 39.9246 accuracy: 0.8348 - loss: 22.9380 - val_accuracy: 0.7544 - val_loss: 43.9116