

# OUTPUTS : IMAGES

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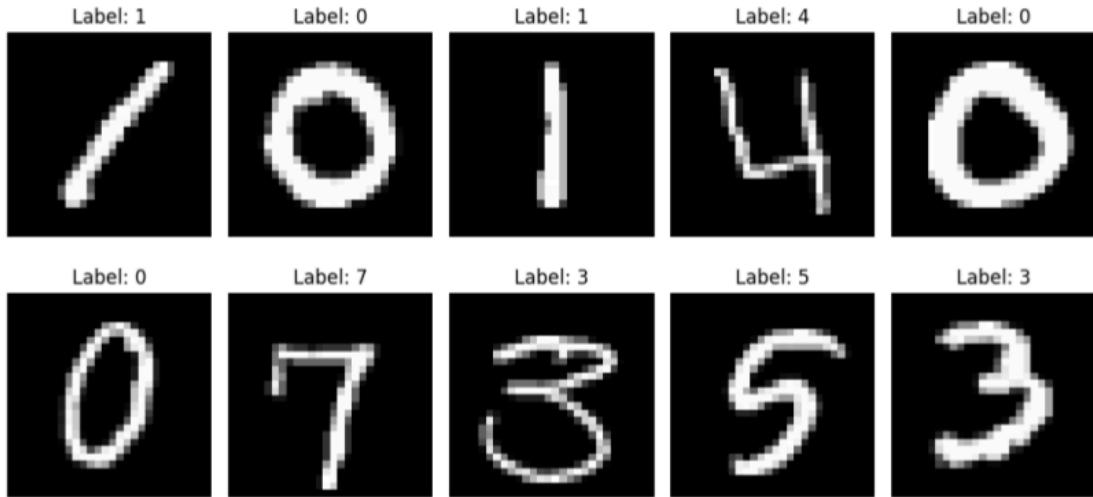


Image Type: Sample Grid of Handwritten Digits

Description: A visualization displaying the first 10 images from the dataset to verify data loading. The grid shows grayscale images of handwritten numbers with their corresponding labels above them, such as "Label: 1", "Label: 0", "Label: 4", etc.

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## TASK 4 : MODEL EVALUATION

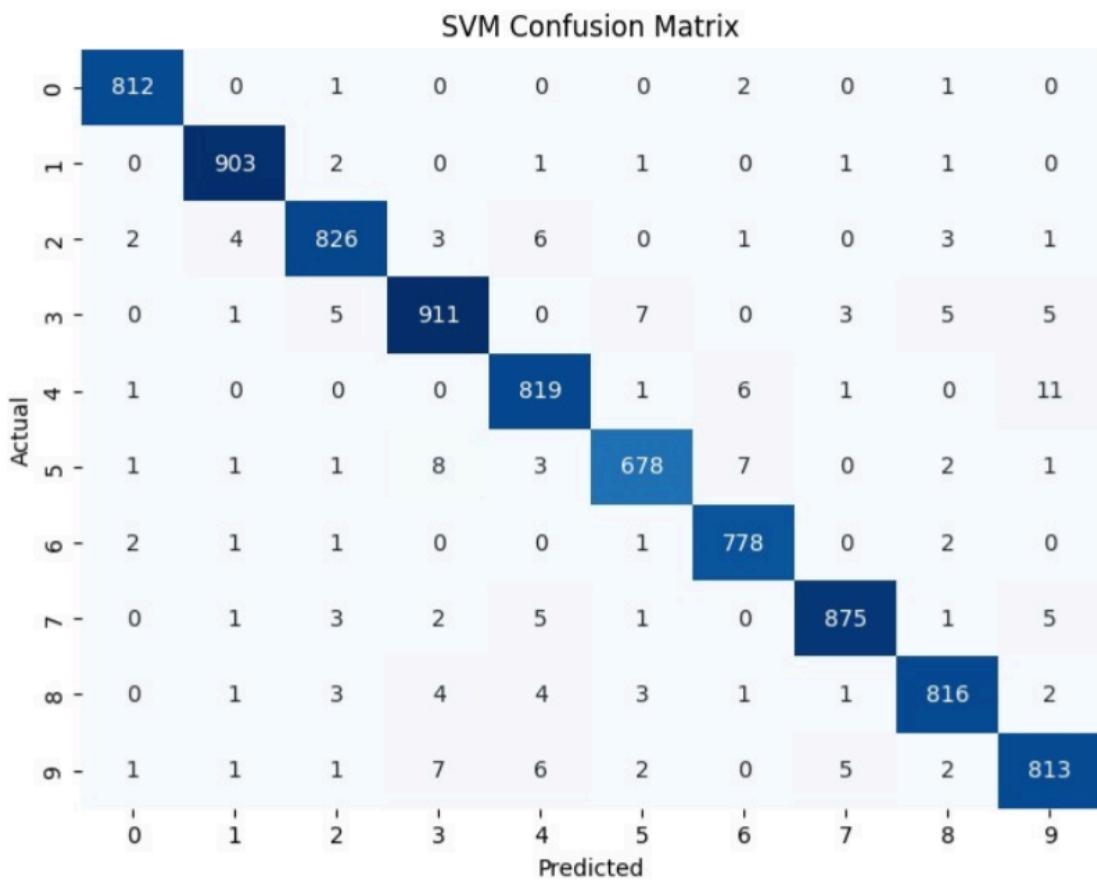


Image Type: SVM Confusion Matrix

Description: A heatmap visualization of the Confusion Matrix for the Support Vector Machine (SVM) model. The data shows the correlation between "Actual" classes and "Predicted" classes to evaluate where the model made errors (e.g., identifying how many 8s were misclassified as 2s).



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## Image Type: Common Misclassifications (SVM)

Description: A set of specific image samples that the SVM model predicted incorrectly. The visual displays the handwritten digit alongside its actual label and the incorrect prediction, such as:

True: 9, Predicted: 0

True: 8, Predicted: 5

True: 9, Predicted: 7

True: 7, Predicted: 4.

## TASK 1 : DATA LOADING & EXPLORATION

Ensemble Confusion Matrix										
Actual	0	1	2	3	4	5	6	7	8	9
0	812	0	1	0	0	0	2	0	1	0
1	1	904	1	0	0	1	1	1	0	0
2	6	10	819	2	4	1	1	2	0	1
3	2	4	6	904	1	5	0	2	8	5
4	1	1	2	1	818	0	3	1	0	12
5	2	2	3	12	2	670	7	0	2	2
6	4	1	1	0	0	2	775	0	2	0
7	0	10	3	2	3	1	0	867	1	6
8	5	9	5	12	7	7	1	1	787	1
9	5	2	3	7	11	2	1	4	2	801
0	1	2	3	4	5	6	7	8	9	
Predicted										

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### **Bonus Task 1: Voting Ensemble**

Image Type: Ensemble Confusion Matrix

Description: A heatmap visualization of the Confusion Matrix for the Voting Ensemble model (which combined KNN, SVM, and Decision Tree). Similar to the SVM matrix, this table displays the "Actual" vs "Predicted" counts to demonstrate if the ensemble method corrected errors made by individual models.