UJIAN AKHIR SEMESTER
MACHINE LEARNING

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Deskripsi Data & Preprocessing

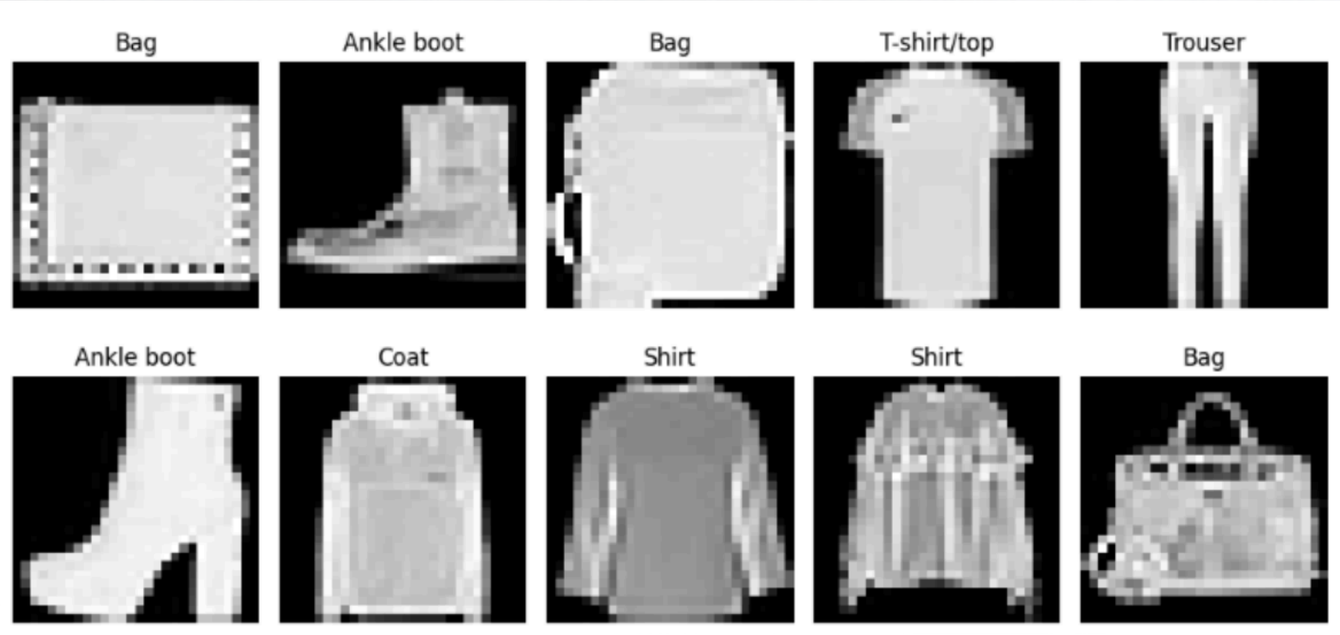
Dataset: Fashion-MNIST

- Format data: Gambar pakaian 28×28 piksel (grayscale), 10 kelas
- Jumlah data: 60.000 data latih & 10.000 data uji

Preprocessing:

- Normalisasi piksel 0–255 → 0–1 (training lebih stabil)
- Data latih dibagi menjadi train dan validation (monitor performa model)

EDA (Exploratory Data Analysis)



Pada bagian EDA, ditampilkan beberapa contoh gambar dari dataset Fashion-MNIST dengan berbagai kategori.

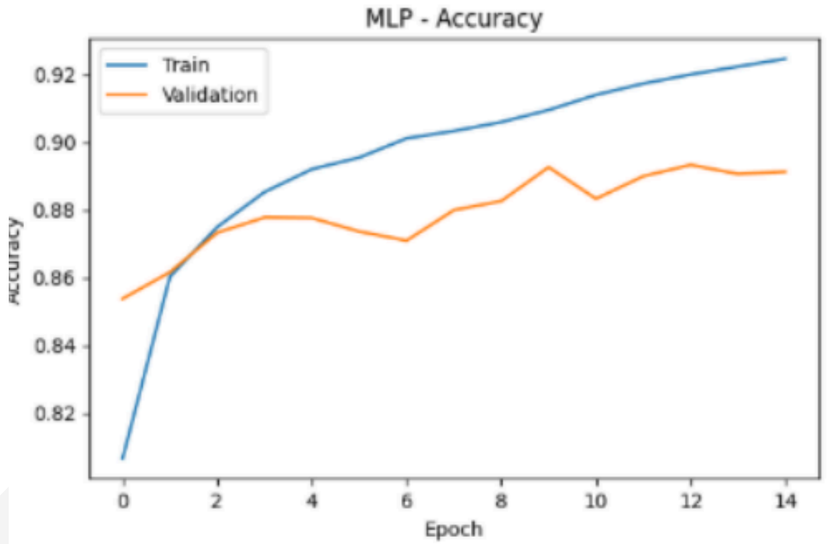
Model SVM

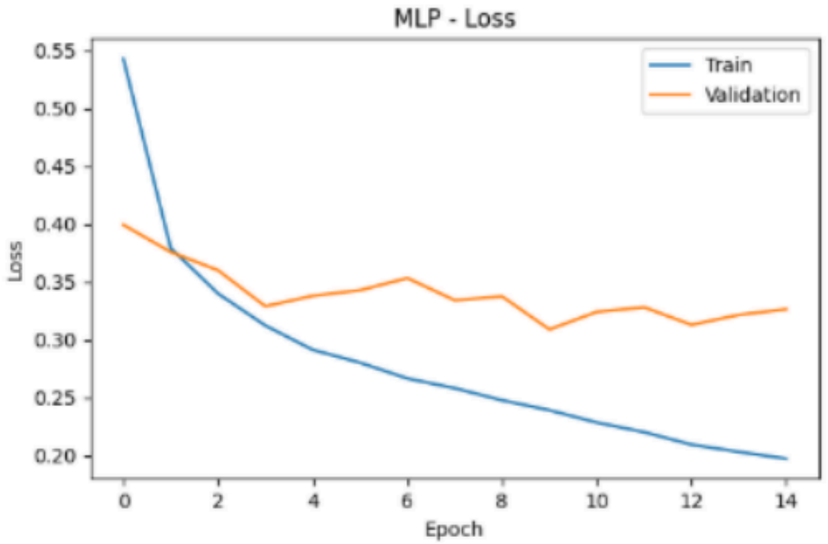
```
print("\n--- Training SVM RBF")
start = time.time()

limit = 10000  # supaya tidak lama
svm_rbf = SVC(kernel="rbf", C=10, gamma="scale")
svm_rbf.fit(X_train_svm[:limit], y_train[:limit])

y_pred_svm_rbf = svm_rbf.predict(X_test_svm)
acc_svm_rbf = accuracy_score(y_test, y_pred_svm_rbf)

print(f"Waktu Training: {time.time() - start:.2f} detik")
print(f"Akurasi SVM RBF (TEST): {acc_svm_rbf:.4f}")
```

```
--- Training SVM RBF (Opsional, lebih berat) ---
Waktu Training: 79.49 detik
Akurasi SVM RBF (TEST): 0.8749
```

Learning Curve (MLP)

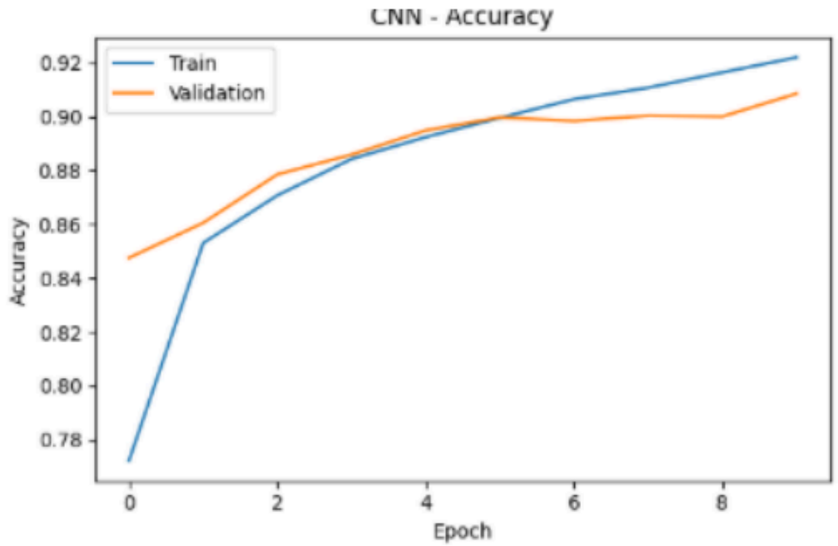
- MLP

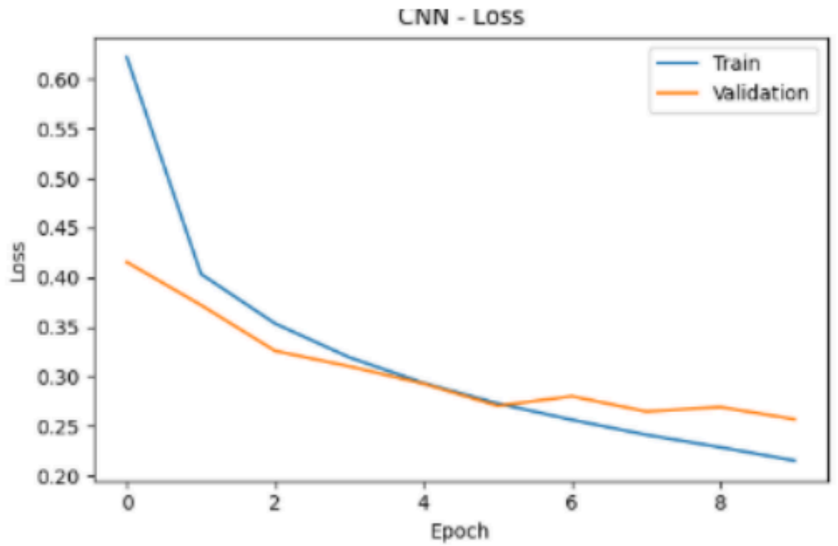


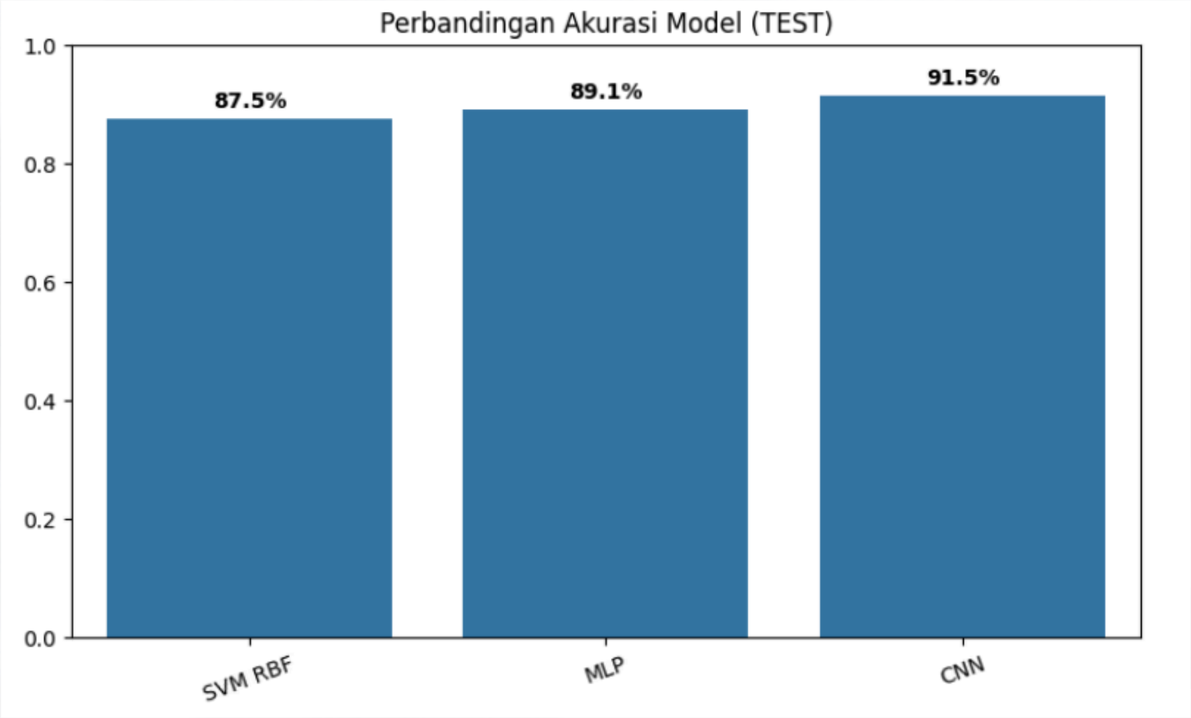


Learning Curve (CNN)

- CNN

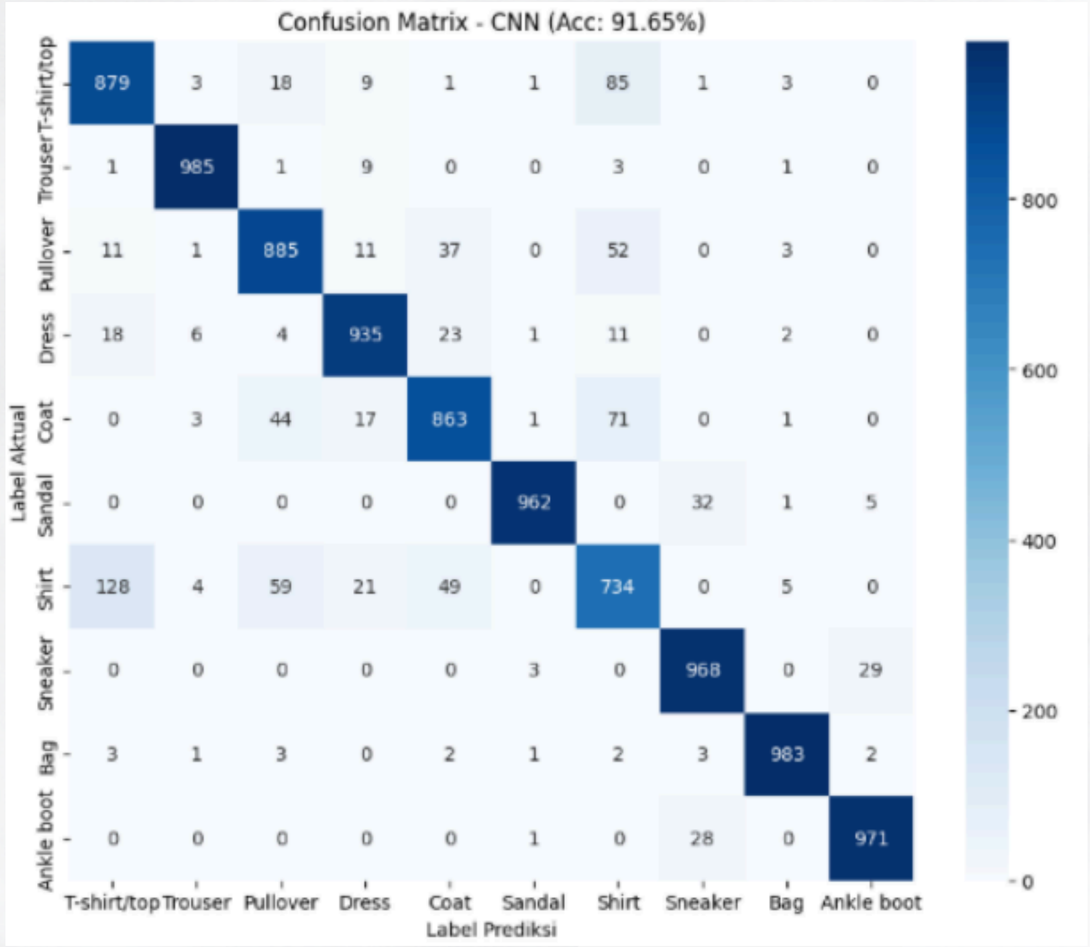






Perbandingan hasil (grafik accuracy)

Confusion matrix dan Classification Report



Classification Report (Model Terbaik):

	precision	recall	f1-score	support
T-shirt/top	0.85	0.88	0.86	1000
Trouser	0.98	0.98	0.98	1000
Pullover	0.87	0.89	0.88	1000
Dress	0.93	0.94	0.93	1000
Coat	0.89	0.86	0.87	1000
Sandal	0.99	0.96	0.98	1000
Shirt	0.77	0.73	0.75	1000
Sneaker	0.94	0.97	0.95	1000
Bag	0.98	0.98	0.98	1000
Ankle boot	0.96	0.97	0.97	1000
accuracy			0.92	10000
macro avg	0.92	0.92	0.92	10000
weighted avg	0.92	0.92	0.92	10000