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HERMÈS PARIS

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Fashion MNIST Image Classification with CNNs

This presentation explores image classification using Convolutional Neural Networks (CNNs) on the Fashion MNIST dataset. We'll cover everything from data preprocessing to model evaluation.

What is Fashion MNIST?

Dataset Overview

Fashion MNIST is a dataset of 70,000 grayscale images of fashion products. (60,000 in Train and 10,000 in Test)

It contains 10 categories such as t-shirts, trousers, dresses, and shoes.

Why Fashion MNIST?

It serves as a drop-in replacement for the original MNIST dataset, but is more challenging.

It's commonly used for benchmarking machine learning algorithms.

CNN Architecture

1

Convolutional Layers

Extract features using convolutional filters.

2

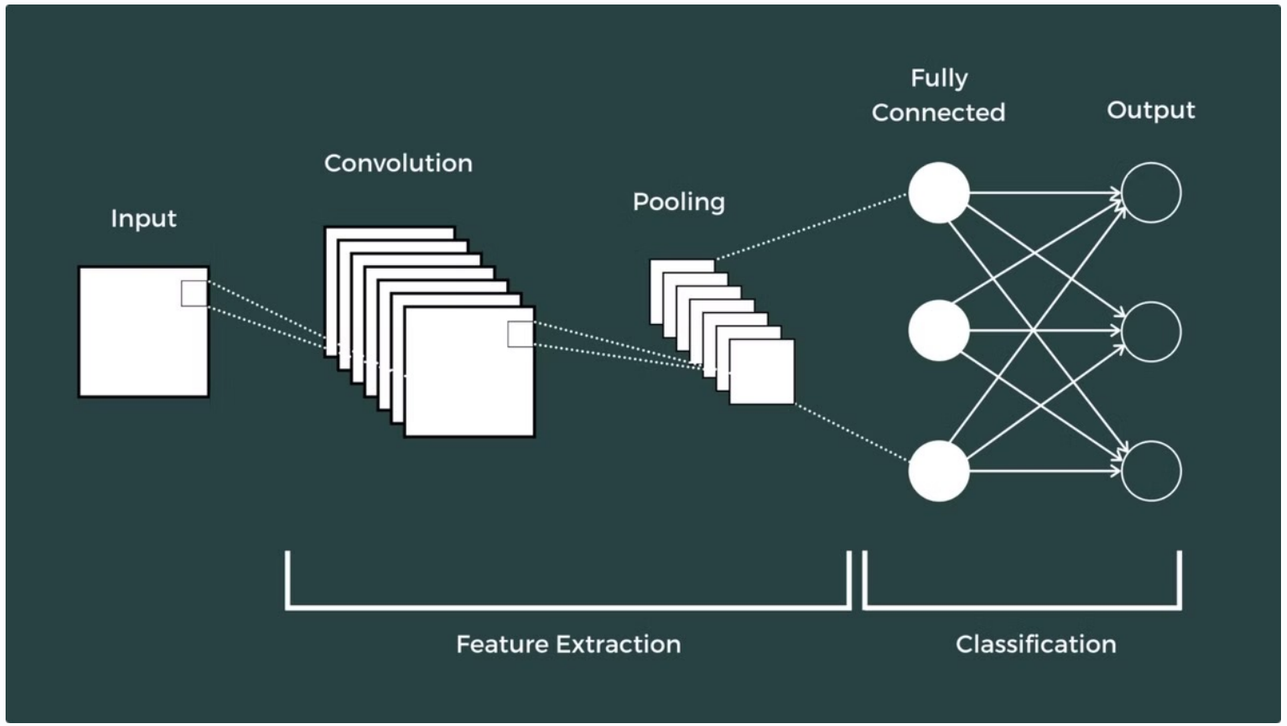
Pooling Layers

Reduce dimensionality and retain important features.

3

Fully Connected Layers

Classify images based on learned features.



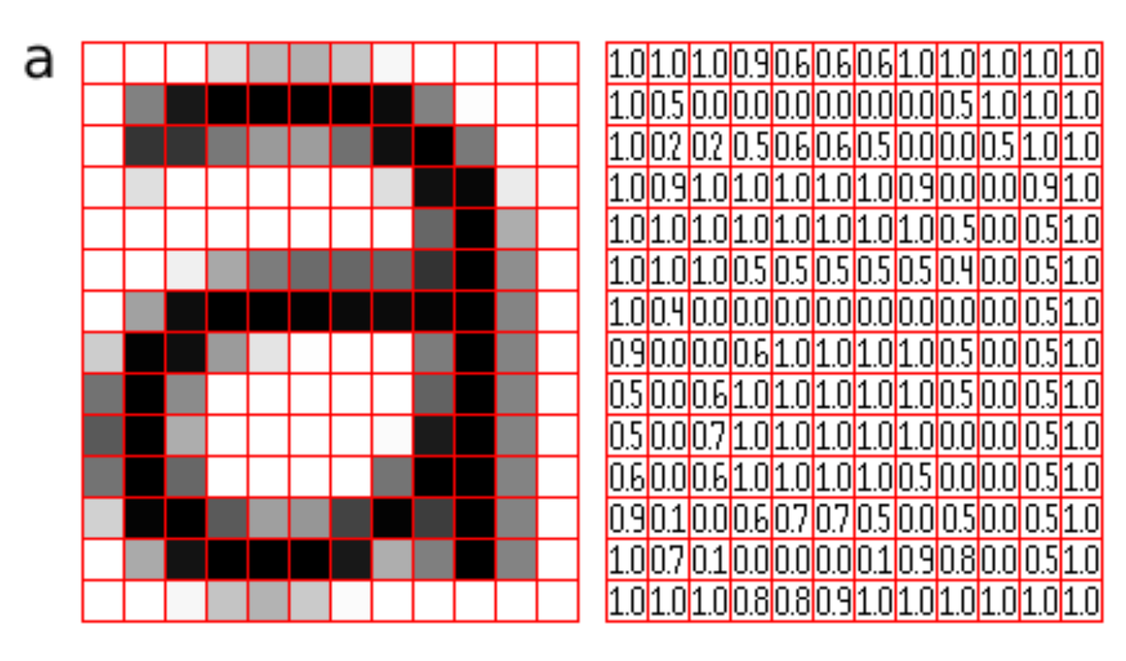
Data Preprocessing

1 Rescaling

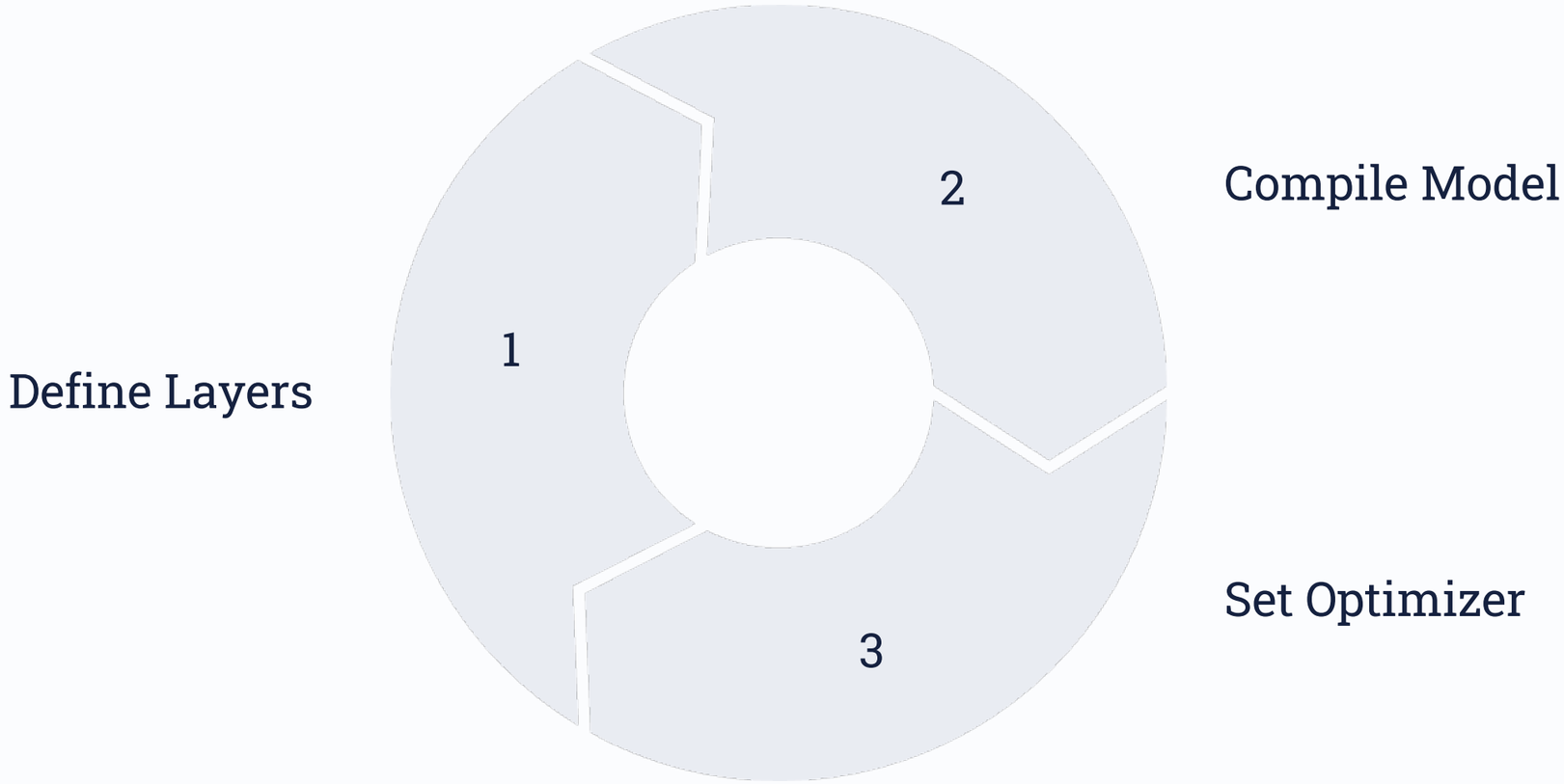
Normalize pixel values to a **0-1 range.**

2 Splitting

Divide the dataset into training and validation sets.



Building the Model



Building a CNN model in Keras/TensorFlow involves defining convolutional, pooling, and fully connected layers. Compile the model with an appropriate loss function and optimizer.

Training and Evaluation

Training

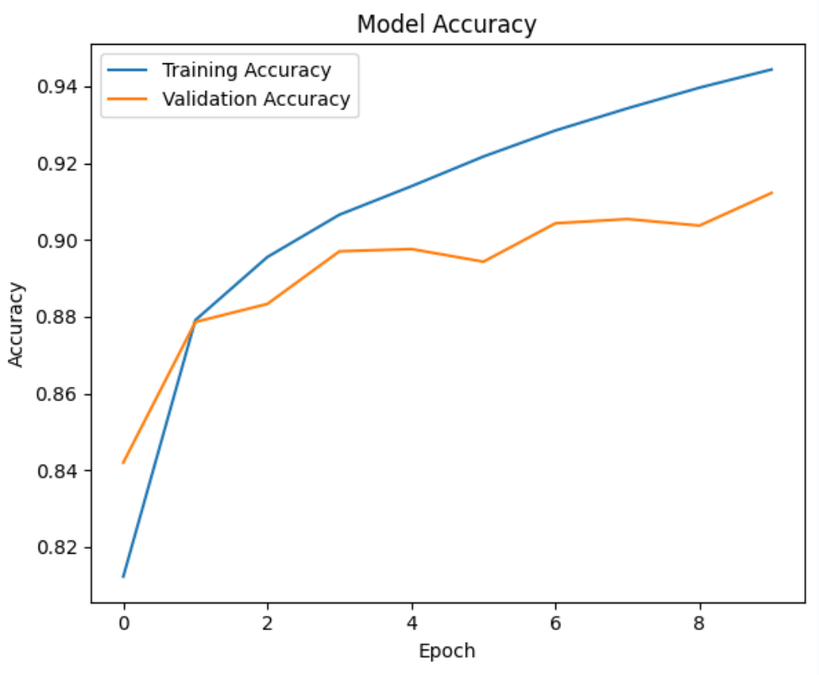
Feed training data to the model and adjust weights.

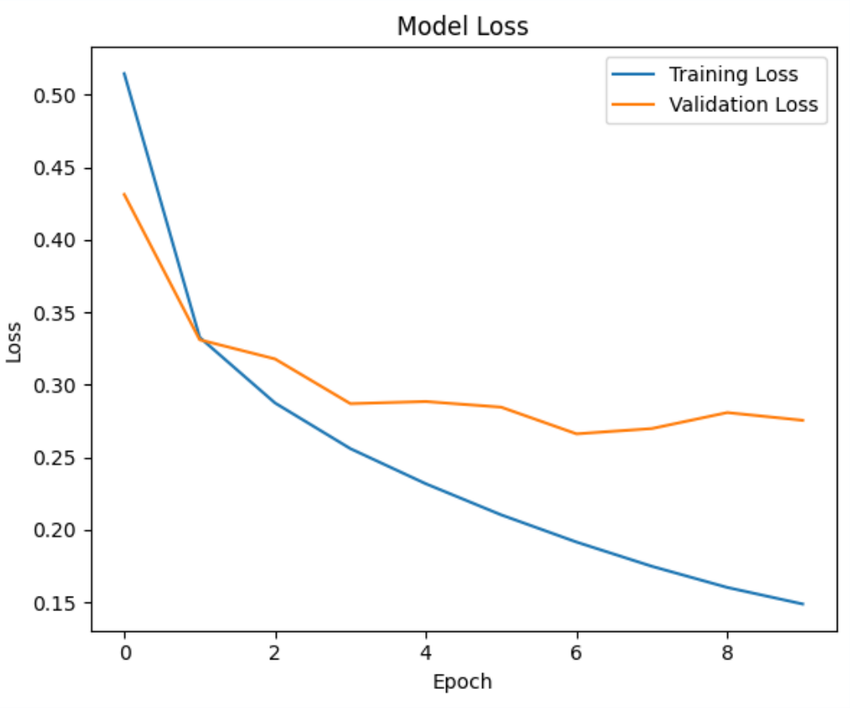
Validation

Monitor performance on the validation set.

Testing

Evaluate the model on unseen test data.





Conclusion

Key Takeaways

CNNs are effective for image classification.

Future Improvements

Explore more advanced architectures.