


CNN IMAGE CLASSIFICATION PROJECT

BUILT IN KNIME ANALYTICS PLATFORM

BY IDOWU MALACHI

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- This project implements a Convolutional Neural Network (CNN) using the MNIST dataset in KNIME Analytics Platform to classify handwritten digits. It demonstrates the power of low-code AI using deep learning workflows.

PROJECT OVERVIEW

PROJECT OBJECTIVES

- - Classify 28x28 grayscale digit images (0-9)
- - Design CNN using KNIME visual programming
- - Evaluate model using accuracy, loss, and confusion matrix
- - Interpret CNN layers and outputs

CNN MODEL ARCHITECTURE (KNIME + KERAS)

- Input Layer:
28x28 grayscale
images

- Conv2D →
ReLU →
MaxPooling

- Conv2D →
ReLU →
MaxPooling

- Flatten →
Dense →
Softmax

- Output: 10-
class digit
prediction

MODEL EVALUATION RESULTS

- • Accuracy: 98.3%
 - • Precision: 98.1%
 - • Recall: 98.2%
 - • Loss: 0.06
 - • F1 Score: ~98.15%
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- Evaluation was conducted using KNIME's scoring nodes and visual performance tools.

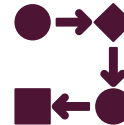
KEY LEARNINGS & TAKEAWAYS



- KNIME enables deep learning without extensive coding



- CNN effectively detects spatial patterns in images




- Visual workflows help in model interpretation and debugging



- Suitable for business analysts and AI beginners alike

ABOUT THE AUTHOR

-  Idowu Malachi
 - Senior Data Scientist | AI/ML Developer | BI Expert
 - GitHub: github.com/idowumalachi
 - LinkedIn: linkedin.com/in/idowumalachi
 - Email: idowumalachi2696@gmail.com
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