Enhancing Forex Trading with Deep Learning

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Background & Problem Statement

- Manual Forex trading is time-consuming and error-prone.
- Rule-based bots offer limited flexibility and low accuracy.
- There is limited research on using deep learning with chart images.
- Visual patterns in candlestick charts remain underutilized.

Objectives & Methodology

- Objectives:
  - Build a CNN model for classifying buy/sell signals.
  - Evaluate performance using accuracy, F1-score, etc.
- Methodology:
  - Chart screenshots collected from TradingView.
  - Model trained using ResNet50 and TensorFlow.
  - Results analyzed using standard metrics.

Key Results

- Model Accuracy: 75%
- F1-score (Buy): 0.74
- F1-score (Sell): 0.76
- Macro avg F1-score: 0.75
- Results show balanced performance across classes.

Discussion of Findings

- CNN model outperformed traditional rule-based bots (~54–60%).
- The model generalizes well to unseen data.
- Supports traders in reducing bias and improving decision-making.
- Aligns with trends in AI-driven FinTech.

Limitations & Recommendations

- Limitations:
  - Dataset size was small.
  - Limited access to Colab GPUs in Kenya.
- Recommendations:
  - Increase dataset coverage.
  - Explore hybrid models (images + indicators).
  - Move towards mobile app deployment.

Conclusion

- CNNs can classify Forex charts with promising accuracy.
- Proposed system helps retail traders make informed decisions.
- Lays foundation for future research in chart-based AI trading.
- Mobile application version is currently underway.