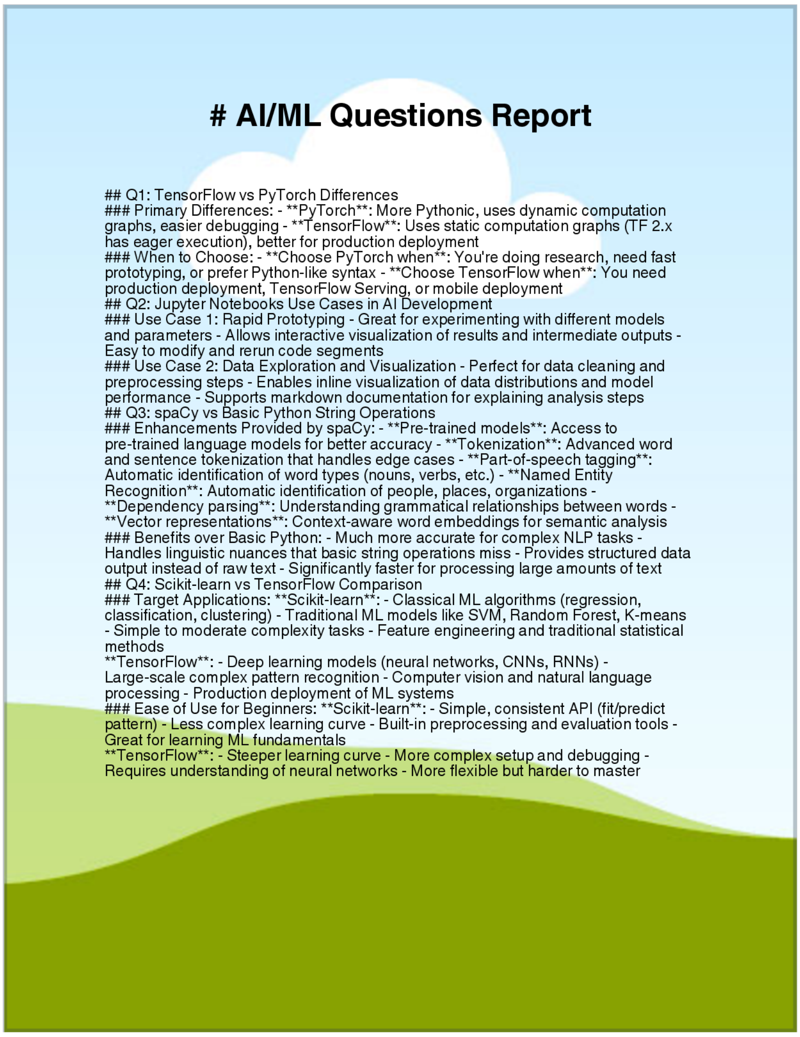
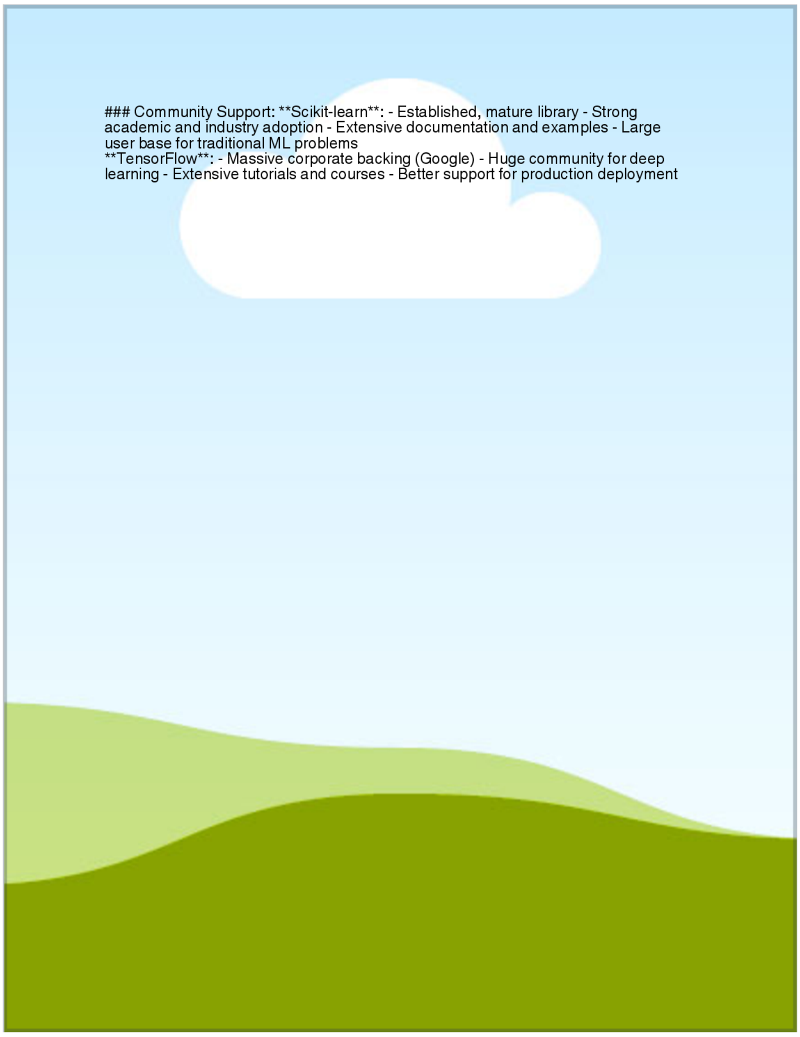


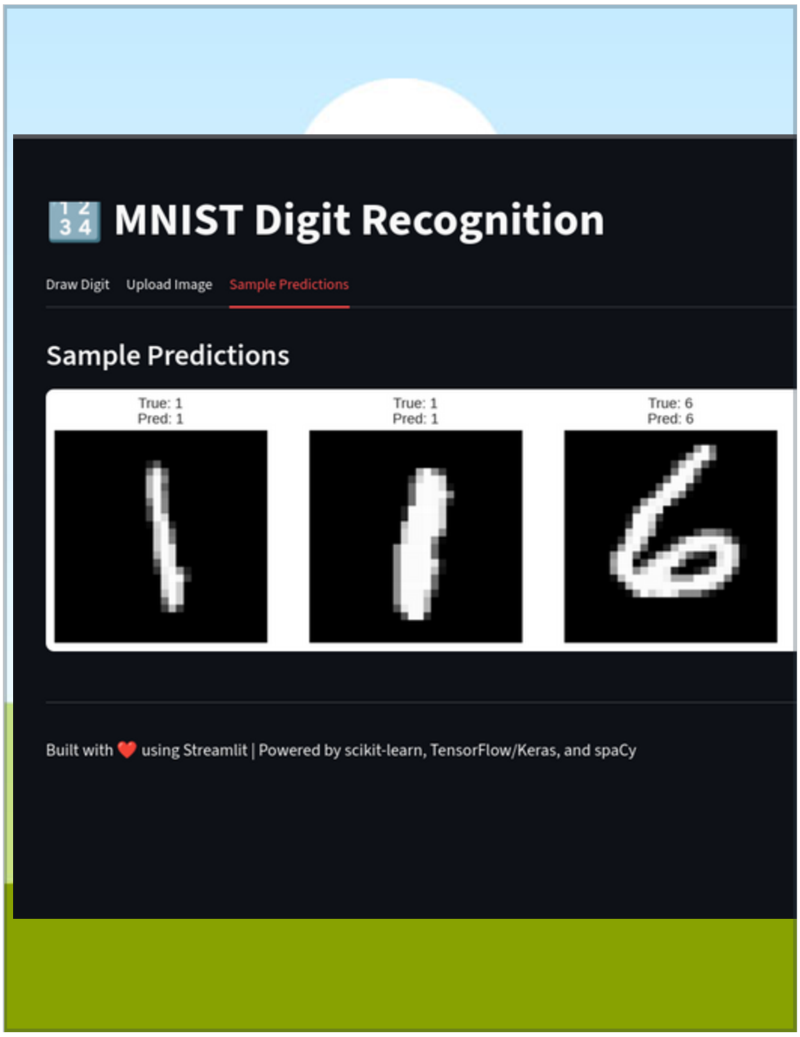
AI/ML Questions Report

Q1: TensorFlow vs PyTorch Differences
Primary Differences: - **PyTorch**: More Pythonic, uses dynamic computation graphs, easier debugging - **TensorFlow**: Uses static computation graphs (TF 2.x has eager execution), better for production deployment
When to Choose: - **Choose PyTorch when**: You're doing research, need fast prototyping, or prefer Python-like syntax - **Choose TensorFlow when**: You need production deployment, TensorFlow Serving, or mobile deployment
Q2: Jupyter Notebooks Use Cases in AI Development
Use Case 1: Rapid Prototyping - Great for experimenting with different models and parameters - Allows interactive visualization of results and intermediate outputs - Easy to modify and rerun code segments
Use Case 2: Data Exploration and Visualization - Perfect for data cleaning and preprocessing steps - Enables inline visualization of data distributions and model performance - Supports markdown documentation for explaining analysis steps
Q3: spaCy vs Basic Python String Operations
Enhancements Provided by spaCy: - **Pre-trained models**: Access to pre-trained language models for better accuracy - **Tokenization**: Advanced word and sentence tokenization that handles edge cases - **Part-of-speech tagging**: Automatic identification of word types (nouns, verbs, etc.) - **Named Entity Recognition**: Automatic identification of people, places, organizations - **Dependency parsing**: Understanding grammatical relationships between words - **Vector representations**: Context-aware word embeddings for semantic analysis
Benefits over Basic Python: - Much more accurate for complex NLP tasks - Handles linguistic nuances that basic string operations miss - Provides structured data output instead of raw text - Significantly faster for processing large amounts of text
Q4: Scikit-learn vs TensorFlow Comparison
Target Applications: **Scikit-learn**: - Classical ML algorithms (regression, classification, clustering) - Traditional ML models like SVM, Random Forest, K-means - Simple to moderate complexity tasks - Feature engineering and traditional statistical methods
TensorFlow: - Deep learning models (neural networks, CNNs, RNNs) - Large-scale complex pattern recognition - Computer vision and natural language processing - Production deployment of ML systems
Ease of Use for Beginners: **Scikit-learn**: - Simple, consistent API (fit/predict pattern) - Less complex learning curve - Built-in preprocessing and evaluation tools - Great for learning ML fundamentals
TensorFlow: - Steeper learning curve - More complex setup and debugging - Requires understanding of neural networks - More flexible but harder to master



Community Support: **Scikit-learn**: - Established, mature library - Strong academic and industry adoption - Extensive documentation and examples - Large user base for traditional ML problems

TensorFlow: - Massive corporate backing (Google) - Huge community for deep learning - Extensive tutorials and courses - Better support for production deployment



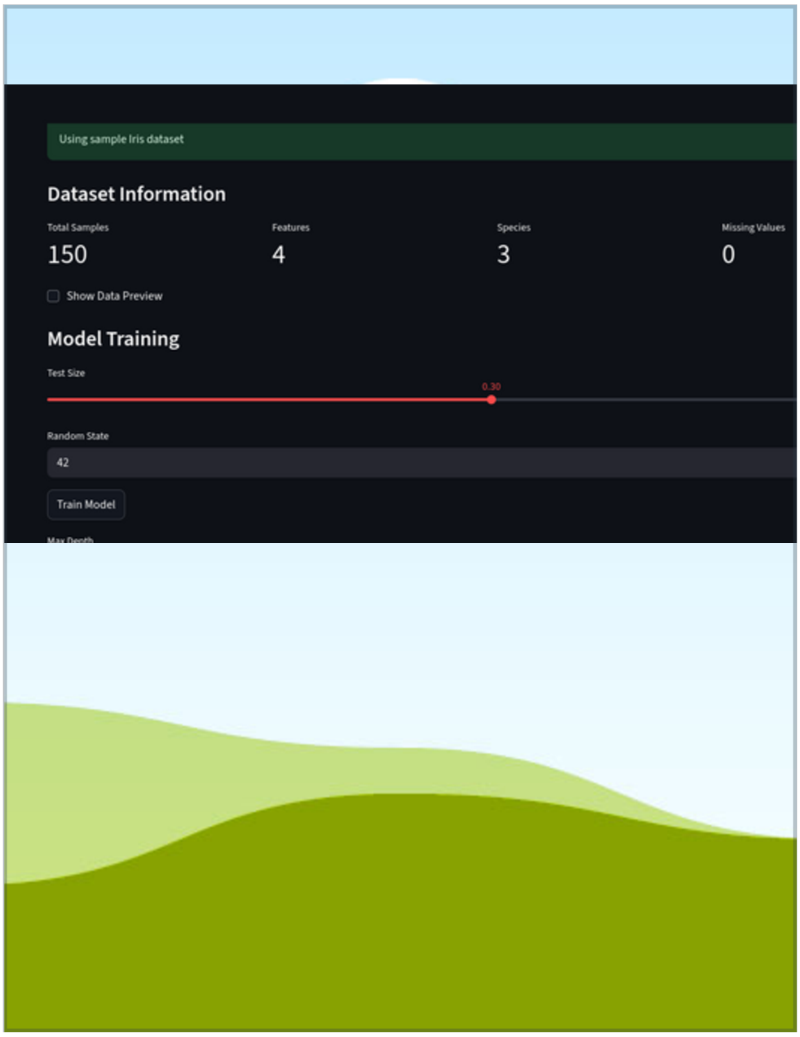
🔢 MNIST Digit Recognition

Draw Digit
Upload Image
Sample Predictions

Sample Predictions

True: 1
Pred: 1
True: 1
Pred: 1
True: 6
Pred: 6

Built with ❤️ using Streamlit | Powered by scikit-learn, TensorFlow/Keras, and spaCy



Using sample Iris dataset

Dataset Information

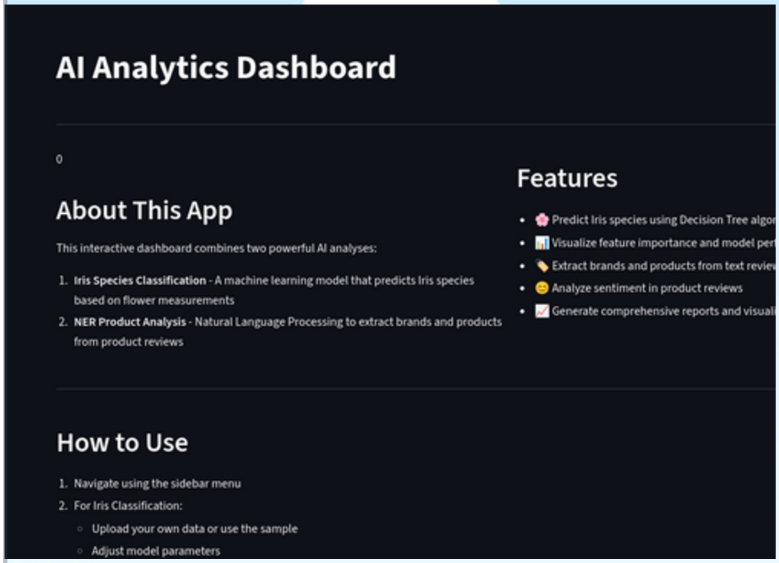
Total Samples	Features	Species	Missing Values
150	4	3	0

☐ Show Data Preview

Model Training

Test Size: 0.30

Random State: 42



AI Analytics Dashboard

0

About This App

This interactive dashboard combines two powerful AI analyses:

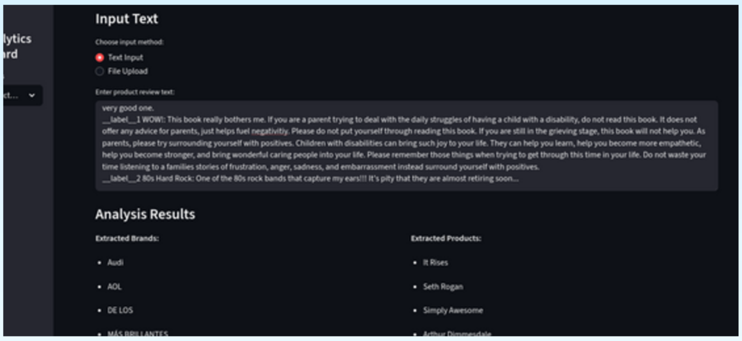
1. **Iris Species Classification** - A machine learning model that predicts Iris species based on flower measurements
2. **NER Product Analysis** - Natural Language Processing to extract brands and products from product reviews

Features

- 🌸 Predict Iris species using Decision Tree algor
- 📊 Visualize feature importance and model per
- 🏷️ Extract brands and products from text review
- 😊 Analyze sentiment in product reviews
- 📈 Generate comprehensive reports and visuali

How to Use

1. Navigate using the sidebar menu
2. For Iris Classification:
    - Upload your own data or use the sample
    - Adjust model parameters



Input Text

Choose input method:

● Text Input
○ File Upload

Enter product review text:

very good one.
__label__1 WOW!: This book really bothers me. If you are a parent trying to deal with the daily struggles of having a child with a disability, do not read this book. It does not offer any advice for parents, just helps fuel negativitiy. Please do not put yourself through reading this book. If you are still in the grieving stage, this book will not help you. As parents, please try surrounding yourself with positives. Children with disabilities can bring such joy to your life. They can help you learn, help you become more empathetic, help you become stronger, and bring wonderful caring people into your life. Please remember those things when trying to get through this time in your life. Do not waste your time listening to a families stories of frustration, anger, sadness, and embarrassment instead surround yourself with positives.
__label__2 80s Hard Rock: One of the 80s rock bands that capture my ears!!! It's pity that they are almost retiring soon...

Analysis Results

Extracted Brands:

- Audi
- AOL
- DE LOS
- MÁS BRILLANTES

Extracted Products:

- It Rises
- Seth Rogan
- Simply Awesome
- Arthur Dimmesdale