**SMART\_SORTING\_PROJECT**

from docx import Document

from datetime import datetime

# Create Word Document

doc = Document()

doc.add\_heading("Project Documentation: Smart Sorting System", 0)

# Add content sections

doc.add\_heading("Project Title", level=1)

doc.add\_paragraph("Smart Sorting: Transfer Learning for Identifying Rotten Fruits and Vegetables")

doc.add\_heading("Project Goal", level=1)

doc.add\_paragraph("Automatically identify fresh vs rotten fruits and vegetables using Transfer Learning in AI/Deep Learning.")

doc.add\_heading("Real-Life Use Cases", level=1)

doc.add\_paragraph("""

1. Food Industries - Automate sorting on conveyor belts using AI and cameras.

2. Supermarkets - Detect rotten shipments early to keep only fresh items.

3. Smart Homes - Use fridge cameras to monitor food spoilage and alert users.

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doc.add\_heading("Project Structure", level=1)

doc.add\_paragraph("""

- Architecture: Model, camera/sensor setup

- Tools: Python, PyTorch, OpenCV, Streamlit

- Data: Images categorized into 'fresh' and 'rotten'

- Model: MobileNetV2 with transfer learning

- Training Script: transfer\_learning\_model.py

- Application: app.py (Streamlit interface)

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doc.add\_heading("Requirements", level=1)

doc.add\_paragraph("""

- Python 3.10+

- Libraries: torch, torchvision, streamlit, opencv-python, matplotlib

- OS: Windows 10+ or Linux

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doc.add\_heading("How It Works", level=1)

doc.add\_paragraph("""

1. Data Preparation - Images are collected in 'data/fresh' and 'data/rotten' folders.

2. Training - Model is trained using transfer learning with MobileNetV2.

3. Model Output - Saved as 'model/fruit\_classifier.pth'.

4. App - Streamlit app allows users to upload an image and receive prediction.

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doc.add\_heading("Output Example", level=1)

doc.add\_paragraph("""

- Upload: apple.jpg

- Output: Fresh

- Upload: rotten\_banana.jpg

- Output: Rotten

""")

doc.add\_heading("Date", level=1)

doc.add\_paragraph(datetime.now().strftime("%B %d, %Y"))

# Save document

docx\_path = "/mnt/data/Smart\_Sorting\_Project\_Documentation.docx"

doc.save(docx\_path)

docx\_path