**NITEX AI Challenge: Sustainable Apparel Classification**

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**Objective**:
You are tasked with developing an AI solution using the Fashion MNIST dataset that aligns with our company's vision. Considering the job description provided, we would like you to focus on the identification and classification of sustainable apparel products.

**Dataset**:
[Fashion MNIST] (https://www.kaggle.com/datasets/zalando-research/fashionmnist/data)

**Task Description**:

1. **Data Analysis**:
   - Explore the dataset to understand the distribution of classes and the nature of the images.
   - Document any insights or patterns observed.

2. **Model Development**:
   - Design and train a machine learning or AI model that classifies the apparel products based on the dataset.
   - You are free to choose any architecture or approach but ensure it aligns with the provided job description.

3. **Human-in-the-Loop**:
   - Considering NITEX's emphasis on enhancing human-in-the-loop efficiency, propose a method where human expertise can be combined with your model's predictions to improve accuracy.

4. **Documentation**:
   - Provide a README file that explains your approach, the decisions you made, and instructions to run your code.

5. **Code Structure**:
   - Your solution should be structured and modular.
   - Ensure the use of virtual environments and provide a `requirements.txt` file for package dependencies.

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**Evaluation Procedure**:

1. **Environment Setup**:
   - We will create a virtual environment and install the dependencies listed in the `requirements.txt` file you provide.

2. **Script Execution**:
   - Your solution should include a script named `evaluate_model.py`.
   - This script should accept a command-line argument: the path to a folder containing the dataset for evaluation.

3. **Model Evaluation**:
   - Inside `evaluate_model.py`, your trained model should evaluate all the data present in the folder.
   - The evaluation should produce a classification accuracy or another relevant metric based on the test data.

4. **Output Generation**:
   - After evaluation, the script should generate an `output.txt` file containing:
     - Model's architecture summary.
     - Evaluation metric(s) obtained.
     - Additional insights or observations.

5. **Error Handling**:
   - Handle common errors gracefully, e.g., if the provided folder doesn't exist or is empty, the script should provide an appropriate error message.

6. **Clean Exit**:
   - After generating the `output.txt` file, the script should exit cleanly.

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**Judgment Criteria**:

- Functionality and correctness of the `evaluate_model.py` script.
- Clarity and structure of the code.
- Model's evaluation metric(s) relevance and accuracy.
- Comprehensiveness of the `output.txt` and README files.

Submit your Github link to google form.

**Timeframe**: 2 days.

Best of luck! Your innovative solutions will play a significant role in transforming the future of sustainable apparel with NITEX.