TP1 – Deliverable 1

Group:

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Topic: Automated Sign Language Recognition: A Step Towards Inclusive Communication

Title: American sign language understanding

Dataset: https://www.kaggle.com/datasets/datamunge/sign-language-mnist

Objectives:

- Explore and understand the problem of sign language recognition, focusing on the classification of hand gestures representing letters in American Sign Language (ASL).
- Analyze a real-world image dataset containing images of hand signs corresponding to 24 ASL letters.
- Study existing machine learning and deep learning techniques and build an efficient classification model capable of accurately identifying different hand gestures.
- Perform image preprocessing and normalization and organizing the dataset into training, validation, and testing subsets.
- Evaluate model's performance on unseen data, while using appropriate metrics (accuracy, F1-score, precision, ...).
- Present the results in an appropriate way (graphics and tables) and discuss projects' success and biggest challenges.

- Perform a comprehensive analysis of the results and derive meaningful conclusions, emphasizing the model's impact on automated sign language recognition.
- Suggest potential enhancements and future research directions, such as extending the system to recognize dynamic gestures and complete words.