Research project

IMU-based triggering methodology for Hand Gesture Recognition

Description:

Hand gesture recognition is becoming an important area of research in various fields, including medical studies, human-machine interaction, and sign language communication. It involves the recognition of both delicate finger movements and more general hand gestures. In this context, detecting the beginning of a gesture is essential for classifiers to accurately process relevant data while ignoring non-meaningful hand movements.

The focus of this work is to develop a novel strategy for detecting the beginning of hand gestures using an Inertial Measurement Unit (IMU). The study first reviews the state of the art to identify existing methods for detecting the beginning of gestures. Then, the student is required to collect a set of gestures, process and segment the data, and develop a methodology for detecting the starting point of the gestures.

The project consists of the following tasks:

- State of the art of the segmentation methods used in the recognition of hand gestures.
- Collect a set of hand gesture based on developed Node in MST.
- Features engineering of IMU signals.
- Develop a novel methodology for detecting the starting point of the gestures.
- Documentation of the work

Requirements:

- MATLAB Software
- Knowledge in data processing
- Basic knowledge in electronics
- Self-learning ability, creative thinking, and motivation

Recommended Student Background: Electronic systems and communications/ Data engineering and decisional system

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