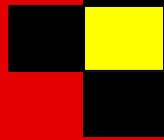


Human Movement Categorization Through MOCAP Data and Body Angles Analysis

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Introduction:

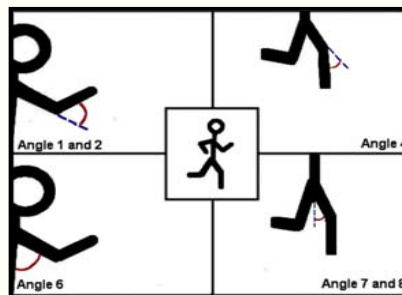
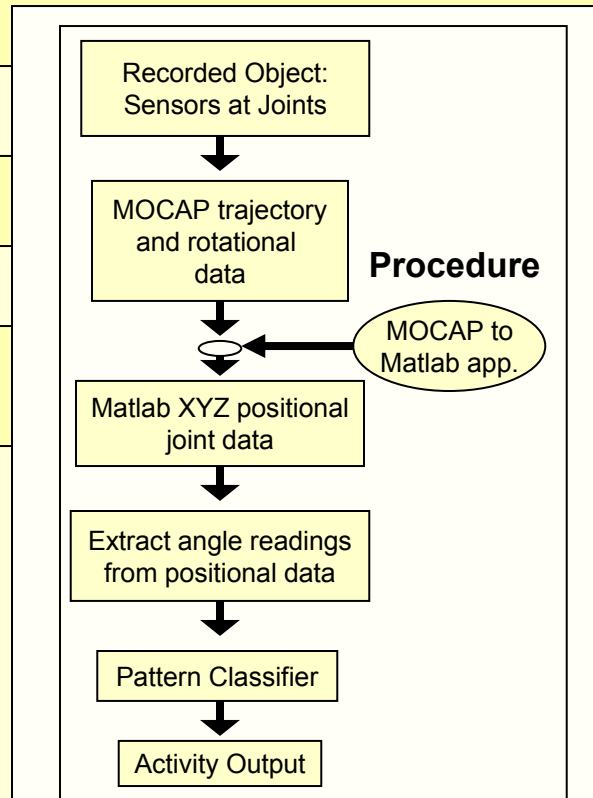
This research focuses on the classification of human movement through extracted angle analysis. Coordinate transforms and and phase matching of signals was also explored.

Purpose:

- Identify possible security threats in a non-invasive manner
- Identify health issues quickly and easily
- Advance understanding of human movement categorization

Method

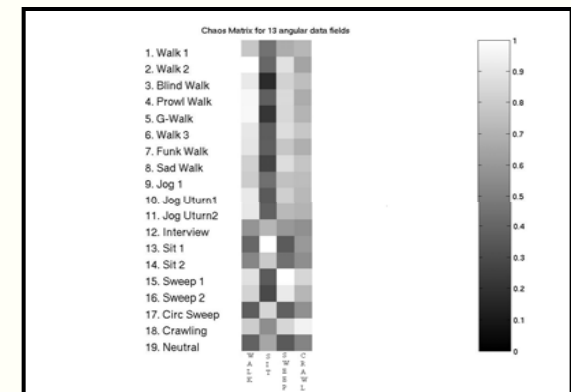
- Transform coordinate system of MOCAP positional data using least square fitting methods
- Extract Angles using a 3D stick figure human body model.
- Align time frame of observed signal with the time frame of exemplar signal
- Classify movement with similarity readings from observed signal compared to exemplar signal by using correlation coefficients.



Visual of angles extracted

Results:

- Accurate classification with 89% accuracy over 18 different activities, with 4 categories of action being considered.



Future work:

- Diversify categories to include subcategories for detecting abnormal movement patterns
- Create method for angle extraction in video.

Conclusion:

Our methods showed promise and we were able to achieve a relatively high rate of successful classifications. The next step in development is to determine a way to extract body angles from video data.