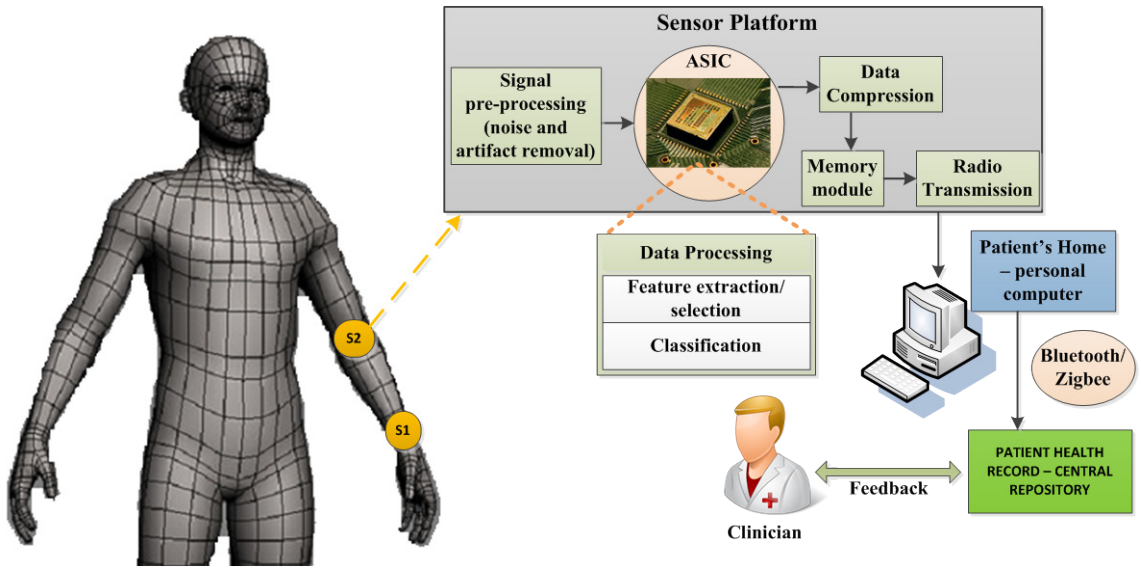

Figure 1: Abstract sensor plane overview

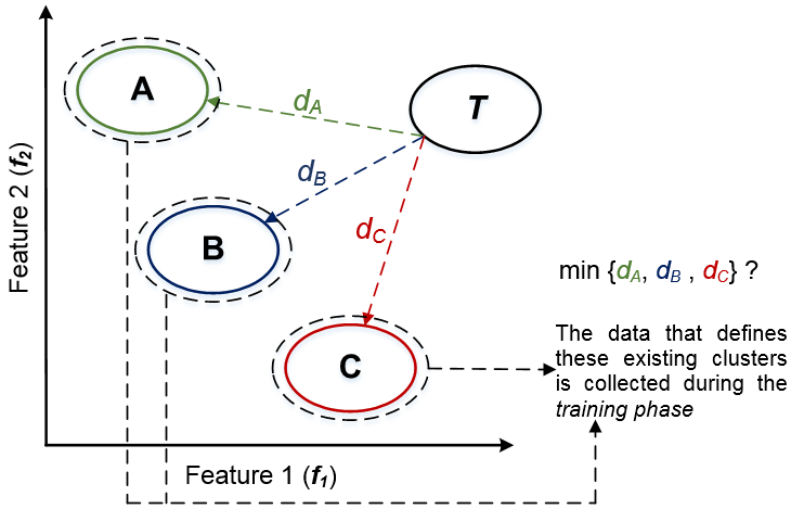

Figure 2: Illustration of the clustering and minimum distance classifier based methodology.

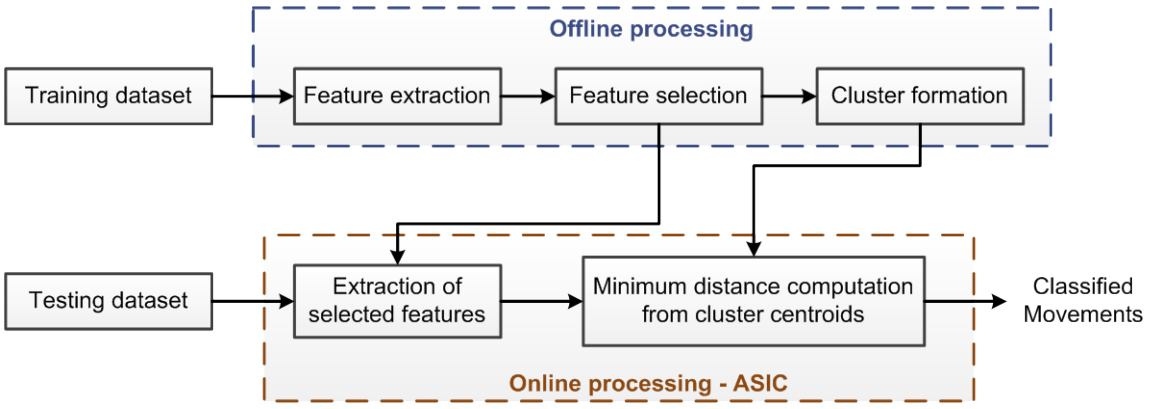

Figure 3: Overview of the offline-online processing – the *training* dataset is processed offline and the *testing* dataset is processed online. The computation of the selected features on the *testing* data and computation of the minimum distance from the pre-computed cluster centroids was done in ASIC for real-time detection of arm movements.

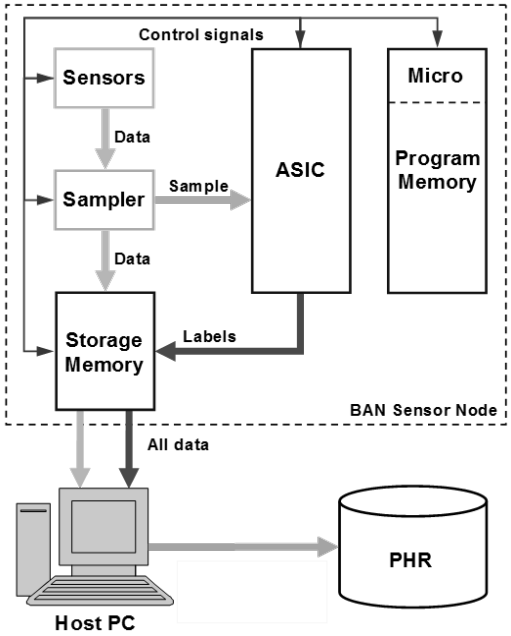

Figure 4: Overview of the envisaged sensor node with the ASIC, microcontroller and memory.

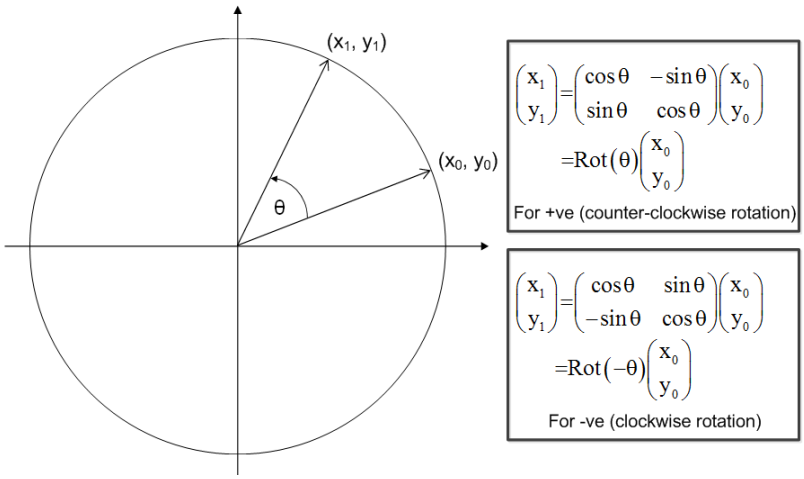

Figure 5: Overview of CORDIC vector rotation from $[X_0, Y_0]$ to $[X_1, Y_1]$ through an angle θ using a series of micro-rotations in the clockwise or anti-clockwise direction.

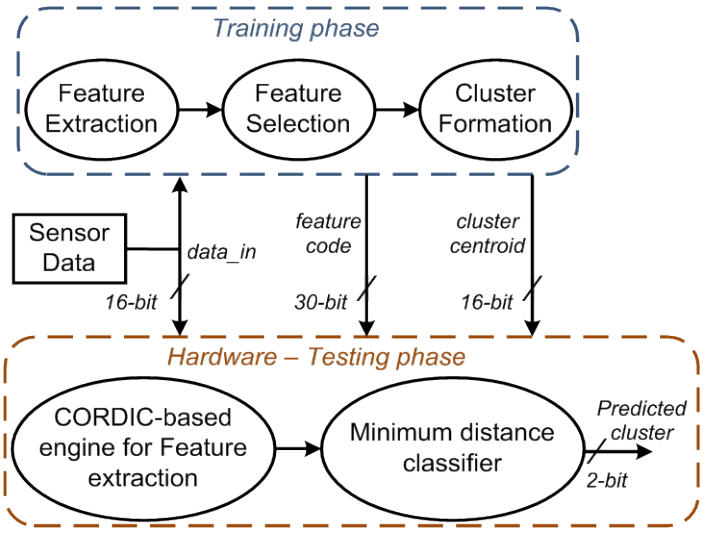

Figure 6: Design overview for the offline-online processing involving clustering and minimum distance classification.

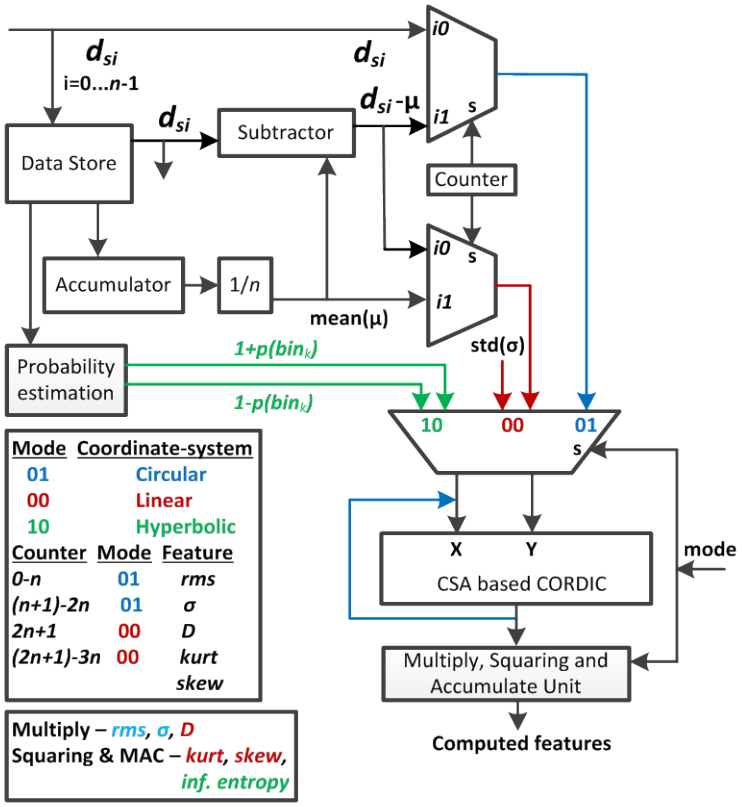

Figure 7: Architectural overview of the CORDIC operation for feature extraction.

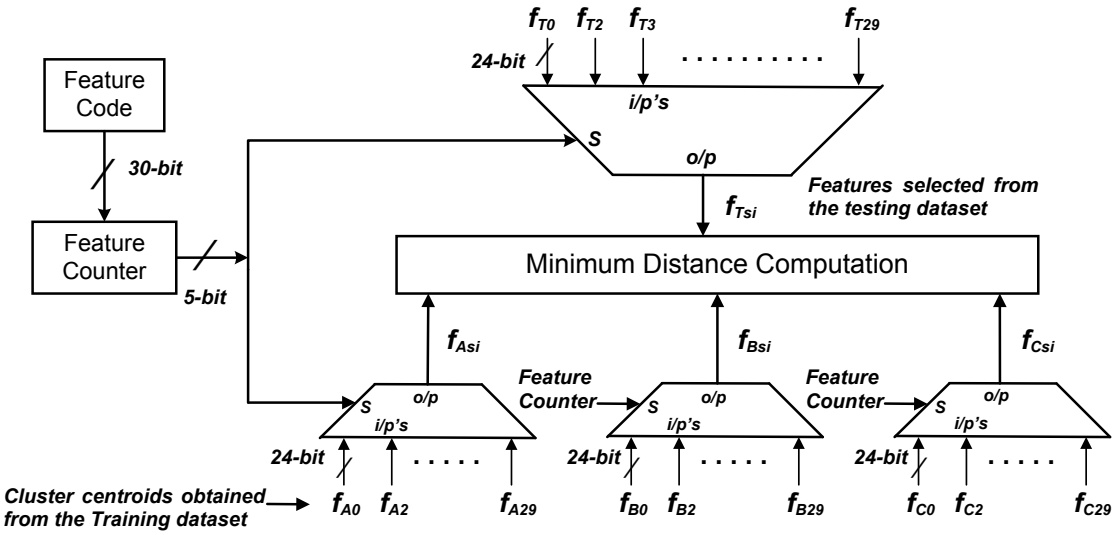

Figure 8: Overview of the minimum distance classifier architecture.

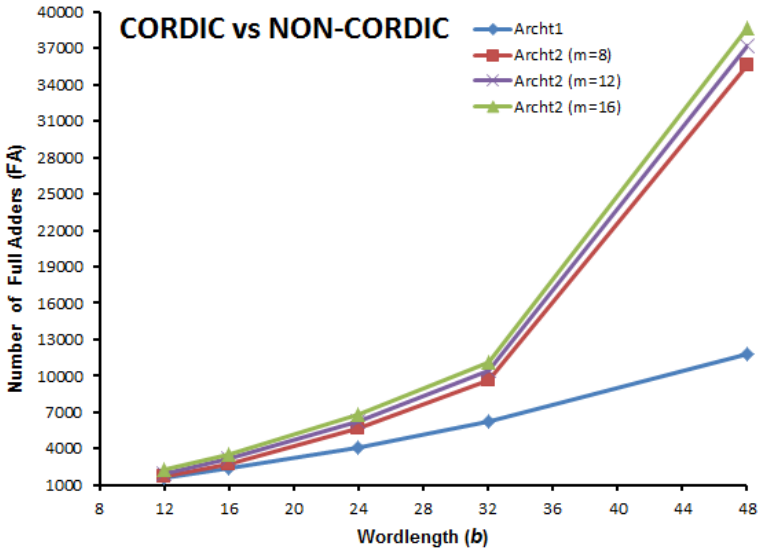

Figure 9: Comparison of hardware complexity for a CORDIC and non-CORDIC based architecture for feature extraction, showing variation in the number of full adders (FA) required with change in word-length.