Preprocessing and noise removal

3-axis accelerometer
3-axis magnetometer
3-axis gyroscope

Piecewise data smoothing and outlier removal.

Accelerometer mean correction.

Calculate new yaw angle from processed data.

Rotate data to NED coordinate frame.

Signal feature estimation

Infinite hidden Markov model to estimate parameters.

Sample from the posterior multiple sequences to find features.

Estimate path on normalized scale through integration.

Path reconstruction

Correct magnetic declination.

Linear transformation of the path to meters.

Align and average path and pressure.

Out: Estimated path with pressure distribution

Two points to rescale the path into meters.

Pressure