Determining orientation of mpu9250 accelerometer/gyro/magnetometer

# Accelerometer

is the gravitational field

is the current acceleration

is the rotation matrix for the device

is the accelerometer measurement

## Roll, Pitch and Yaw

Roll, Pitch and Yaw

, ,

, assuming rotation sequence yaw, pitch, roll.

## Static Device

For a static device,

# Magnetometer

is the local magnetic field

is the accelerometer measurement

# Kalman Filter

State Estimate,

## Predict

A priori state estimate

State error covariance

where and

### For this device

# Sources

<https://cache.freescale.com/files/sensors/doc/app_note/AN3461.pdf>

<https://www.hindawi.com/journals/js/2018/9684326/>