Sample Data Sets for Inertial and Magnetic Sensors

Inertial and magnetic sensors have found their way into a multitude of consumer products, but many engineers have little or no experience with them. The data included here is provided for educational purposes. By comparing/contrasting the various data sets, engineers can develop a better understanding of the pros and cons of various filtering and data recognition approaches associated with these classes of device.

The report presents inertial/magnetic data captured via a third-party IMU (non-NXP inertial measurement unit). The intent is to try to capture typical data sets for a variety of actions such as: lift, slide, tap, nudge, stationary (on table, in pocket), as well as inertial data for walking, standing stationary, etc. Graphs are generated of acceleration, magnetic readings and gyro readings over time. Basic statistics are attached for each data set.

- Inertial Measurement Unit Used For Study (/products/sensors/sample-data-sets-for-inertial-and-magnetic-sensors/inertial-measurement-unit:SENSORDATA_IMU)
- Data File Format (/products/sensors/sample-data-sets-for-inertial-and-magnetic-sensors/data-file-format:SD_DATAFILEFORMAT)
- Matlab Scripts (/products/sensors/sample-data-sets-for-inertial-and-magnetic-sensors/matlab-scripts:SD_MATLAB_SCRIPTS)

See the Dataset Terms of Use Page regarding limitations of use.

Report Generated: 7/3/2011 19:17:3

Sample Data Sets

- Actions (/webapp/sps/site/overview.jsp?code=SENSORDATA#Actions)
- Environment (/webapp/sps/site /overview.jsp?code=SENSORDATA_ENVIRONMENT#Environment)
- Events (/webapp/sps/site/overview.jsp?code=SENSORDATA_EVENTS#Events)
- Gestures (/webapp/sps/site/overview.jsp?code=SENSORDATA_GESTURES#Gestures)
- Locomotion (/webapp/sps/site/overview.jsp?code=SENSORDATA_LOCOMOTION#Locomotion)

Click the listed items to see the data set.

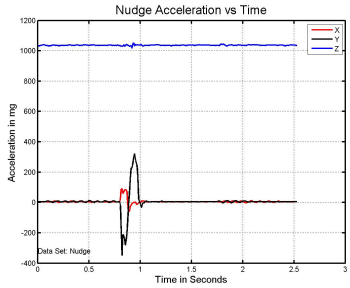
- FastPickup
- Nudge
- Pickup
- Slide
- SlowPickup
- button_click

Link to data file:
Nudge.txt (/files/global_support_files/Nudge.txt)
Data set gathered:
Thursday 06 January 2011 - 12:50:24 PM
Comments:
Horizontal nudge of IMU
Additional Notes:
Start with sensor stationary on table top, nudge it laterally.
PSD Plot Y Scale:
Linear
Data Plots
Collected data includes accelerometer, magnetometer and gyro measurements. Raw data is plotted for each, along with a Power Spectral Density plot of the data. Click on any plot to enlarge it.

Nudge Sensor Statistics

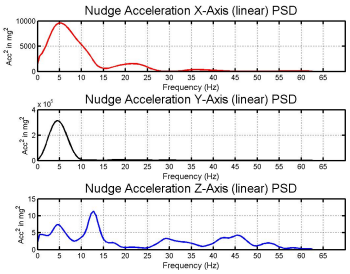
Quantity	Acceleration	Magnetics	Angular Velocity
Units	milli-gs	microteslas	degrees/second
NumPoints	316	316	316
MaxTime	2.53	2.53	2.53
MaxX	90.83	18.89	-503.72
MinX	-61.53	17.67	-505.68
RangeX	152.36	1.22	1.96
MaxY	322.30	-0.63	-522.34
MinY	-348.67	-4.93	-525.28
RangeY	670.97	4.29	2.94
MaxZ	1051.87	28.74	-444.92
MinZ	1016.71	28.40	-532.14
RangeZ	35.16	0.34	87.22

Acceleration



(/files/graphic/training/sensordata

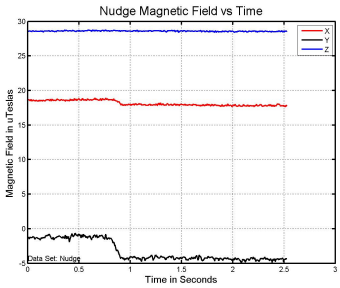
/Nudge_acc.jpg)



(/files/graphic/training/sensordata

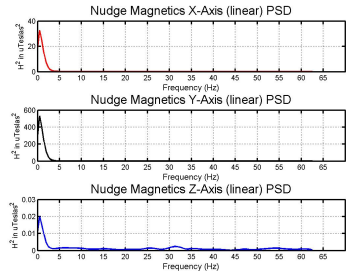
/Nudge_acc_PSD.jpg)

Magnetics



(/files/graphic/training/sensordata

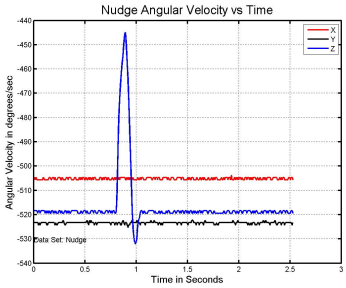
/Nudge_mag.jpg)



(/files/graphic/training/sensordata

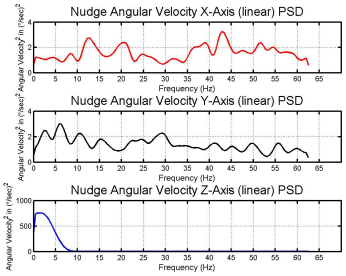
/Nudge_mag_PSD.jpg)

Angular Velocity



(/files/graphic/training/sensordata

/Nudge_av.jpg)



(/files/graphic/training/sensordata

/Nudge_av_PSD.jpg)