DATA DICTIONARY – WEARABLE COMPUTING

Seq

5 Class: Integer

Observation #

Range: 1~10299

subj_no.

30 Class: Integer

30 volunteers within an age bracket of 19-48 years.

Range: 1~30

activity_labels

18 Class: Factor

Six activities performed :

WALKING,
WALKING_UPSTAIRS,
WALKING_DOWNSTAIRS,
SITTING,
STANDING,
LAYING

tBodyAcc-statistics()-

Decimal Class: Number

tBodyAcc : acceleration signal(X,Y,Z) of the body, prefix 't' to denote time

X,Y,Z : 3-axial acceleration signal

statistics() :

mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
arCoeff(): Autorregresion coefficients with Burg order equal to 4
correlation(): correlation coefficient between two signals

Range: normalized and bounded within [-1,1]

tGravityAcc-statistics()-

Decimal Class: Number

tGravityAcc : acceleration signal(X,Y,Z) of the gravity, prefix 't' to denote time

X,Y,Z : 3-axial acceleration signal
statistics() :
mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
arCoeff(): Autorregresion coefficients with Burg order equal to 4
correlation(): correlation coefficient between two signals

Range: normalized and bounded within [-1,1]

tBodyAccJerk-statistics()-

Decimal Class: Number
tBodyAccJerk: body linear acceleration Jerk signals(X,Y,Z) derived in time
X,Y,Z : 3-axial acceleration signal
statistics() :
mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
arCoeff(): Autorregresion coefficients with Burg order equal to 4
correlation(): correlation coefficient between two signals

Range: normalized and bounded within [-1,1]

tBodyGyro-statistics()-

Decimal Class: Number
tBodyGyro: body angular velocity signal(X,Y,Z), prefix 't' to denote time
X,Y,Z : 3-axial acceleration signal
statistics() :
mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation

max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
arCoeff(): Autorregresion coefficients with Burg order equal to 4
correlation(): correlation coefficient between two signals

Range: normalized and bounded within [-1,1]

tBodyGyroJerk-statistics()-

Decimal Class: Number
tBodyGyroJerk: body angular velocity Jerk signals(X,Y,Z) derived in time
X,Y,Z : 3-axial acceleration signal
statistics() :
mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
arCoeff(): Autorregresion coefficients with Burg order equal to 4
correlation(): correlation coefficient between two signals

Range: normalized and bounded within [-1,1]

tBodyAccMag-statistics()

Decimal Class: Number
tBodyAccMag
The magnitude of "tBodyAcc" three-dimensional signals were calculated using the Euclidean norm
tBodyAcc : acceleration signal(X,Y,Z) of the body, prefix 't' to denote time
statistics() :
mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area

energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
arCoeff(): Autorregresion coefficients with Burg order equal to 4

Range: normalized and bounded within [-1,1]

tGravityAccMag-statistics()

Decimal Class: Number

tGravityAccMag

The magnitude of "tGravityAcc" three-dimensional signals were calculated using the Euclidean nor

tGravityAcc : acceleration signal(X,Y,Z) of the gravity, prefix 't' to denote time

statistics() :

mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
arCoeff(): Autorregresion coefficients with Burg order equal to 4

Range: normalized and bounded within [-1,1]

tBodyAccJerkMag-statistics()

Decimal Class: Number

tBodyAccJerkMag

Also the magnitude of "tBodyAccJerk" three-dimensional signals were calculated using the Euclidean norm

tBodyAccJerk: body linear acceleration Jerk signals(X,Y,Z) derived in time

statistics() :

mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
arCoeff(): Autorregresion coefficients with Burg order equal to 4

Range: normalized and bounded within [-1,1]

tBodyGyroMag-statistics()

Decimal Class: Number

tBodyGyroMag

The magnitude of "tBodyGyro" three-dimensional signals were calculated using the Euclidean norm

tBodyGyro: body angular velocity signal(X,Y,Z), prefix 't' to denote time

statistics() :

mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
arCoeff(): Autorregresion coefficients with Burg order equal to 4

Range: normalized and bounded within [-1,1]

tBodyGyroJerkMag-statistics()

Decimal Class: Number

tBodyGyroJerkMag

The magnitude of "tBodyGyroJerk" three-dimensional signals were calculated using the Euclidean norm

tBodyGyroJerk: body angular velocity Jerk signals(X,Y,Z) derived in time

statistics() :

mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
arCoeff(): Autorregresion coefficients with Burg order equal to 4

Range: normalized and bounded within [-1,1]

fBodyAcc-statistics()-

Decimal Class: Number

A Fast Fourier Transform (FFT) was applied to acceleration signal(X,Y,Z) of the body

fBodyAcc-XYZ
The 'f' to indicate frequency domain signals
statistics() :
mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
maxInds(): index of the frequency component with largest magnitude
meanFreq(): Weighted average of the frequency components to obtain a mean frequency
skewness(): skewness of the frequency domain signal
kurtosis(): kurtosis of the frequency domain signal
bandsEnergy(): Energy of a frequency interval within the 64 bins of the FFT of each window

Range: normalized and bounded within [-1,1]

fBodyAccJerk-statistics()-

Decimal Class: Number

A Fast Fourier Transform (FFT) was applied to body linear acceleration Jerk signals(X,Y,Z)
fBodyAccJerk-XYZ
The 'f' to indicate frequency domain signals
statistics() :
mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
maxInds(): index of the frequency component with largest magnitude
meanFreq(): Weighted average of the frequency components to obtain a mean frequency
skewness(): skewness of the frequency domain signal
kurtosis(): kurtosis of the frequency domain signal
bandsEnergy(): Energy of a frequency interval within the 64 bins of the FFT of each window

Range: normalized and bounded within [-1,1]

fBodyGyro-statistics()-

Decimal Class: Number

A Fast Fourier Transform (FFT) was applied to body angular velocity signal(X,Y,Z)
fBodyGyro-XYZ
The 'f' to indicate frequency domain signals
statistics() :

- mean(): Mean value
- std(): Standard deviation
- mad(): Median absolute deviation
- max(): Largest value in array
- min(): Smallest value in array
- sma(): Signal magnitude area
- energy(): Energy measure. Sum of the squares divided by the number of values.
- iqr(): Interquartile range
- entropy(): Signal entropy
- maxInds(): index of the frequency component with largest magnitude
- meanFreq(): Weighted average of the frequency components to obtain a mean frequency
- skewness(): skewness of the frequency domain signal
- kurtosis(): kurtosis of the frequency domain signal
- bandsEnergy(): Energy of a frequency interval within the 64 bins of the FFT of each window

Range: normalized and bounded within [-1,1]

fBodyAccMag-statistics()

Decimal Class: Number

A Fast Fourier Transform (FFT) was applied to magnitude of "tBodyAcc" three-dimensional signals
fBodyAccMag
The 'f' to indicate frequency domain signals
statistics() :

- mean(): Mean value
- std(): Standard deviation
- mad(): Median absolute deviation
- max(): Largest value in array
- min(): Smallest value in array
- sma(): Signal magnitude area
- energy(): Energy measure. Sum of the squares divided by the number of values.
- iqr(): Interquartile range
- entropy(): Signal entropy
- maxInds(): index of the frequency component with largest magnitude
- meanFreq(): Weighted average of the frequency components to obtain a mean frequency
- skewness(): skewness of the frequency domain signal
- kurtosis(): kurtosis of the frequency domain signal

Range: normalized and bounded within [-1,1]

fBodyAccJerkMag-statistics()

Decimal Class: Number

A Fast Fourier Transform (FFT) was applied to magnitude of "tBodyAccJerk" three-dimensional signals

fBodyAccJerkMag

The 'f' to indicate frequency domain signals

statistics() :

mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
maxInds(): index of the frequency component with largest magnitude
meanFreq(): Weighted average of the frequency components to obtain a mean frequency
skewness(): skewness of the frequency domain signal
kurtosis(): kurtosis of the frequency domain signal

Range: normalized and bounded within [-1,1]

fBodyBodyAccJerkMag-statistics()

Decimal Class: Number

A Fast Fourier Transform (FFT) was applied to magnitude of "tBodyGyro" three-dimensional signals

fBodyGyroMag

The 'f' to indicate frequency domain signals

statistics() :

mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
maxInds(): index of the frequency component with largest magnitude
meanFreq(): Weighted average of the frequency components to obtain a mean frequency
skewness(): skewness of the frequency domain signal
kurtosis(): kurtosis of the frequency domain signal

Range: normalized and bounded within [-1,1]

fBodyBodyGyroMag-statistics()

Decimal Class: Number

A Fast Fourier Transform (FFT) was applied to magnitude of "tBodyGyroJerk" three-dimensional signals

fBodyGyroJerkMag

The 'f' to indicate frequency domain signals

statistics() :

mean(): Mean value
std(): Standard deviation
mad(): Median absolute deviation
max(): Largest value in array
min(): Smallest value in array
sma(): Signal magnitude area
energy(): Energy measure. Sum of the squares divided by the number of values.
iqr(): Interquartile range
entropy(): Signal entropy
maxInds(): index of the frequency component with largest magnitude
meanFreq(): Weighted average of the frequency components to obtain a mean frequency
skewness(): skewness of the frequency domain signal
kurtosis(): kurtosis of the frequency domain signal

Range: normalized and bounded within [-1,1]

angle(tBodyAccMean,gravity)
angle(tBodyAccJerkMean),gravityMean)
angle(tBodyGyroMean,gravityMean)
angle(tBodyGyroJerkMean,gravityMean)
angle(X,gravityMean)
angle(Y,gravityMean)
angle(Z,gravityMean)

angle(): Angle between to vectors.

averaging the signals in a signal window sample

Range: normalized and bounded within [-1,1]

bax(/_y/_z)_V1 : V128

Decimal Class: Number

bax is short for body_acc_x(/_y/_z), x(/_y/_z) axsis

body acceleration three-dimensional signals obtained by subtracting the gravity from the total acceleration.

V1-V128 : 128 element vector.

Unit: in standard gravity units 'g'.

Range: -1.2322 ~ 1.29991

bgx(/_y/_z)_V1 : V128

Decimal Class: Number

bgx is short for body_gyro_x(/_y/_z), x(/_y/_z) axsis

Three-dimensional angular velocity vector measured by the gyroscope for each window sample.

V1-V128 : 128 element vector.

Unit: radians/second.

Range: -1.3453 ~ 0.97598

tax(/_y/_z)_V1 : V128

Decimal Class: Number

tax is short for total_acc_x(/_y/_z), x(/_y/_z) axsis

three-dimensional acceleration signal from the smartphone accelerometer

V1-V128 : 128 element vector.

Unit: in standard gravity units 'g'.

Range: -2.763 ~ 2.36598