

DATA DICTIONARY – 2020 SAMSUNG DATA ANALYSIS (GETTING AND CLEANING DATA COURSERA – JOÃO VITOR SOUSA FLORIANO)

The features selected for this database come from the accelerometer and gyroscope 3-axial signals. These signals were filtered using a median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz to remove noise. Similarly, the acceleration signal was then separated into body and gravity acceleration signals using another low pass Butterworth filter with a corner frequency of 0.3 Hz.

- Numeric Features are normalized and bounded within [-1,1].

Subject_ID :

Factor Variable

Represents a unique identifier for each one of the 30 volunteers.

Activity_Label :

Factor Variable

Represents a unique identifier for each one of the six activities performed (WALKING, WALKING_UPSTAIRS, WALKING_DOWNSTAIRS, SITTING, STANDING, LAYING)

time_Body_acceleration_meanX :

Numeric Variable

Represents the mean of the body linear acceleration X component

Units: Standard gravity units ['g']

time_Body_acceleration_meanY :

Numeric Variable

Represents the mean of the body linear acceleration Y component

Units: Standard gravity units ['g']

time_Body_acceleration_meanZ :

Numeric Variable

Represents the mean of the body linear acceleration Z component

Units: Standard gravity units ['g']

time_Body_acceleration_stdX :

Numeric Variable

Represents the standard deviation of the body linear acceleration X component

Units: Standard gravity units ['g']

time_Body_acceleration_stdY :

Numeric Variable

Represents the standard deviation of the body linear acceleration Y component

Units: Standard gravity units ['g']

time_Body_acceleration_stdZ :

Numeric Variable

Represents the standard deviation of the body linear acceleration Z component

Units: Standard gravity units ['g']

time_Gravity_acceleration_meanX :

Numeric Variable

Represents the mean of the gravity X component
Units: Standard gravity units ['g']

time_Gravity_acceleration_meanY :
Numeric Variable
Represents the mean of the gravity Y component
Units: Standard gravity units ['g']

time_Gravity_acceleration_meanZ :
Numeric Variable
Represents the mean of the gravity Z component
Units: Standard gravity units ['g']

time_Gravity_acceleration_stdX :
Numeric Variable
Represents the standard deviation of the gravityX component
Units: Standard gravity units ['g']

time_Gravity_acceleration_stdY :
Numeric Variable
Represents the standard deviation of the gravityY component
Units: Standard gravity units ['g']

time_Gravity_acceleration_stdZ :
Numeric Variable
Represents the standard deviation of the gravityZ component
Units: Standard gravity units ['g']

time_Body_acceleration_jerk_meanX :
Numeric Variable
Represents the mean of the body linear acceleration jerk (derivative in time) X component
Units: Standard gravity units ['g'] / s

time_Body_acceleration_jerk_meanY :
Numeric Variable
Represents the mean of the body linear acceleration jerk (derivative in time) Y component
Units: Standard gravity units ['g'] / s

time_Body_acceleration_jerk_meanZ :
Numeric Variable
Represents the mean of the body linear acceleration jerk (derivative in time) Z component
Units: Standard gravity units ['g'] / s

time_Body_acceleration_jerk_stdX :
Numeric Variable
Represents the standard deviation of the body linear acceleration jerk (derivative in time) X component
Units: Standard gravity units ['g'] / s

time_Body_acceleration_jerk_stdY :
Numeric Variable

Represents the standard deviation of the body linear acceleration jerk (derivative in time) Y component

Units: Standard gravity units ['g'] / s

time_Body_acceleration_jerk_stdZ :

Numeric Variable

Represents the standard deviation of the body linear acceleration jerk (derivative in time) Z component

Units: Standard gravity units ['g'] / s

time_Body_angular_velocity_meanX :

Numeric Variable

Represents the mean of the body angular velocity X component

Units: rad/s

time_Body_angular_velocity_meanY :

Numeric Variable

Represents the mean of the body angular velocity Y component

Units: rad/s

time_Body_angular_velocity_meanZ :

Numeric Variable

Represents the mean of the body angular velocity Z component

Units: rad/s

time_Body_angular_velocity_stdX :

Numeric Variable

Represents the standard deviation of the body angular velocity X component

Units: rad/s

time_Body_angular_velocity_stdY :

Numeric Variable

Represents the standard deviation of the body angular velocity Y component

Units: rad/s

time_Body_angular_velocity_stdZ :

Numeric Variable

Represents the standard deviation of the body angular velocity z component

Units: rad/s

time_Body_angular_velocity_jerk_meanX :

Numeric Variable

Represents the mean of the body angular velocity jerk (derivative in time) X component

Units: rad/s²

time_Body_angular_velocity_jerk_meanY :

Numeric Variable

Represents the mean of the body angular velocity jerk (derivative in time) Y component

Units: rad/s²

time_Body_angular_velocity_jerk_meanZ :

Numeric Variable

Represents the mean of the body angular velocity jerk (derivative in time) Z component
Units: rad/s²

time_Body_angular_velocity_jerk_stdX :

Numeric Variable

Represents the standard deviation of the body angular velocity jerk (derivative in time) X component

Units: rad/s²

time_Body_angular_velocity_jerk_stdY :

Numeric Variable

Represents the standard deviation of the body angular velocity jerk (derivative in time) Y component

Units: rad/s²

time_Body_angular_velocity_jerk_stdZ :

Numeric Variable

Represents the standard deviation of the body angular velocity jerk (derivative in time) Z component

Units: rad/s²

time_Body_acceleration_magnitude_mean :

Numeric Variable

Represents the mean of the body linear acceleration total magnitude (components norm)

Units: Standard gravity units ['g']

time_Body_acceleration_magnitude_std :

Numeric Variable

Represents the standard deviation of the body linear acceleration total magnitude (components norm)

Units: Standard gravity units ['g']

time_Gravity_acceleration_magnitude_mean :

Numeric Variable

Represents the mean of the gravity total magnitude (components norm)

Units: Standard gravity units ['g']

time_Gravity_acceleration_magnitude_std :

Numeric Variable

Represents the standard deviation of the gravity total magnitude (components norm)

Units: Standard gravity units ['g']

time_Body_acceleration_jerk_magnitude_mean :

Numeric Variable

Represents the mean of the body linear acceleration jerk (derivative in time) total magnitude (components norm)

Units: Standard gravity units ['g'] /s

time_Body_acceleration_jerk_magnitude_std :

Numeric Variable

Represents the standard deviation of the body linear acceleration jerk (derivative in time) total magnitude (components norm)

Units: Standard gravity units [g] /s

time_Body_angular_velocity_magnitude_mean :

Numeric Variable

Represents the mean of the body angular velocity total magnitude (components norm)

Units: rad/s

time_Body_angular_velocity_magnitude_std :

Numeric Variable

Represents the standard deviation of the body angular velocity total magnitude (components norm)

Units: rad/s

time_Body_angular_velocity_jerk_magnitude_mean :

Numeric Variable

Represents the mean of the body angular velocity jerk (derivative in time) total magnitude (components norm)

Units: rad/s²

time_Body_angular_velocity_jerk_magnitude_std :

Numeric Variable

Represents the standard deviation of the body angular velocity jerk (derivative in time) total magnitude (components norm)

Units: rad/s²

Finally a Fast Fourier Transform (FFT) was applied to the time signals producing all the following features. The physical quantities represented are the same, the only difference is that those features are represented in the frequency domain.

frequency_Body_acceleration_meanX :

Numeric Variable

frequency_Body_acceleration_meanY :

Numeric Variable

frequency_Body_acceleration_meanZ :

Numeric Variable

frequency_Body_acceleration_stdX :

Numeric Variable

frequency_Body_acceleration_stdY :

Numeric Variable

frequency_Body_acceleration_stdZ :

Numeric Variable

frequency_Body_acceleration_jerk_meanX :

Numeric Variable

frequency_Body_acceleration_jerk_meanY :

Numeric Variable

frequency_Body_acceleration_jerk_meanZ :

Numeric Variable

frequency_Body_acceleration_jerk_stdX :

Numeric Variable

frequency_Body_acceleration_jerk_stdY :

Numeric Variable

frequency_Body_acceleration_jerk_stdZ :

Numeric Variable
frequency_Body_angular_velocity_meanX :
Numeric Variable
frequency_Body_angular_velocity_meanY :
Numeric Variable
frequency_Body_angular_velocity_meanZ :
Numeric Variable
frequency_Body_angular_velocity_stdX :
Numeric Variable
frequency_Body_angular_velocity_stdY :
Numeric Variable
frequency_Body_angular_velocity_stdZ :
Numeric Variable
frequency_Body_acceleration_magnitude_mean :
Numeric Variable
frequency_Body_acceleration_magnitude_std :
Numeric Variable
frequency_Body_acceleration_jerk_magnitude_mean :
Numeric Variable
frequency_Body_acceleration_jerk_magnitude_std :
Numeric Variable
frequency_Body_angular_velocity_magnitude_mean :
Numeric Variable
frequency_Body_angular_velocity_magnitude_std :
Numeric Variable
frequency_Body_angular_velocity_jerk_magnitude_mean :
Numeric Variable
frequency_Body_angular_velocity_jerk_magnitude_std :
Numeric Variable

This codebook was made with the help of:

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Human Activity Recognition Using Smartphones Dataset
Version 1.0

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