**IoT Vibration Data Description Document**

**Overview**

This document provides a detailed description of the IoT vibration data collected from sensors. The data is stored in JSON format, with each timestamp's data split into three separate files corresponding to the three axes of measurement: Axial, Vertical, and Horizontal.

**Data File Structure**

For every timestamp instance, the data is stored in three separate JSON files:

* **Axial:** Axial\_<timestamp>.json
* **Vertical:** Vertical\_<timestamp>.json
* **Horizontal:** Horizontal\_<timestamp>.json

Each file contains the following information:

**JSON Structure**

{

"timestamp": <float>,

"no\_of\_samples": <int>,

"fs": <float>,

"axis": <string>,

"raw\_data": [<int>, <int>, <int>, ...]

}

**Field Descriptions**

1. **timestamp** *(float)*:
   * The UNIX timestamp indicating when the data was collected.
   * Example: 1524017318.0
2. **no\_of\_samples** *(int)*:
   * The total number of data points collected for the given axis.
   * Example: 16384
3. **fs** *(float)*:
   * The sampling frequency (in Hz) used during data collection.
   * Note: The fs value might slightly vary across different timestamps but will remain consistent across all three axes (Axial, Vertical, Horizontal) for a given timestamp.
   * Example: 26039
4. **axis** *(string)*:
   * The axis for which the vibration data is recorded.
   * Possible values: "Axial", "Vertical", "Horizontal"
5. **raw\_data** *(list of integers)*:
   * The vibration data collected for the respective axis.
   * The list contains no\_of\_samples integers representing the raw vibration measurements.
   * Example: [1, 2, 3, ..., <26039 data points>]

**Data Consistency Rules**

1. **File Naming:**
   * Each timestamp will have three JSON files named based on the respective axes (Axial, Vertical, Horizontal).
   * Example: For timestamp 1524017318, the files will be:
     + Axial\_1524017318.json
     + Vertical\_1524017318.json
     + Horizontal\_1524017318.json
2. **Consistency of fs:**
   * The fs value (sampling frequency) will be the same across all three axis files for a given timestamp.
3. **Number of Samples:**
   * The no\_of\_samples field will be identical across all three axis files for a given timestamp.

**Folder Structure**

The data files are organized in a folder containing all JSON files. Each file corresponds to a specific timestamp and axis.

Example folder structure:

/data\_folder/

Axial\_1524017318.json

Vertical\_1524017318.json

Horizontal\_1524017318.json

Axial\_1524017345.json

Vertical\_1524017345.json

Horizontal\_1524017345.json

...

If you have further questions regarding the data structure or require assistance in handling the data, feel free to reach out.