Electric Motor Vibrations Dataset

This dataset contains samples provided by vibrations sensor that can be used in designing and testing machine learning algorithms for general classification problems or more specific one such as predictive maintenance.

Dataset is organized as follows:

No.	File name	Category	Description	Data length [data samples]
1	01 - m1_half_shaft_speed_no_mechanical_load	Normal operation	M1 test asynchronous motor running without mechanical load set at half of maximum shaft revolution speed	107336
2	02 - m1_load_0.5Nm_half_speed	Normal operation with load	M1 test asynchronous motor running with mechanical load at torque value of 0.5 Nm and set at half of maximum shaft revolution speed	102909
3	03 - m1_mechanically_umbalanced_half_speed	Mechanical fault (shaft misalignment)	M1 test asynchronous motor running without mechanical load and set at half of maximum shaft revolution speed in presence of mechanical imbalance at shaft	100514
4	04 - m1_mechanically_umbalanced_half_speed	Mechanical fault (shaft misalignment)	M1 test asynchronous motor running without mechanical load and set at half of maximum shaft revolution speed in presence of mechanical imbalance at shaft	142799
5	05 - m1_mechanically_umbalanced_load_0.5Nm_half_speed	Mechanical fault (shaft misalignment) with load	M1 test asynchronous motor running with mechanical load at torque value of 0.5 Nm and set at half of maximum shaft revolution speed in presence of mechanical imbalance at shaft	151093
6	06 - m1_electrically_50_ohm_fault_half_speed	Electrical fault	M1 test asynchronous motor running without mechanical load and set at half of maximum shaft revolution speed in presence of fault simulated with a 50 Ohm resistor	104293
7	07 - m1_electrically_100_ohm_fault_half_speed	Electrical fault	M1 test asynchronous motor running without mechanical load and set at half of maximum shaft revolution speed in presence of fault simulated with a 100 Ohm resistor	101854
8	08 - m1_electrically_150_ohm_fault_half_speed	Electrical fault	M1 test asynchronous motor running without mechanical load and set at half of maximum shaft revolution speed in presence of fault simulated with a 150 Ohm resistor	107174
9	09 - m1_electrically_50_ohm_fault_load_0.5Nm_half_speed	Electrical fault with load	M1 test asynchronous motor running with mechanical load at torque value of 0.5 Nm and set at half of maximum shaft revolution speed in presence of fault simulated with a 50 Ohm resistor	102782
10	10 - m1_electrically_100_ohm_fault_load_0.5Nm_half_speed	Electrical fault with load	M1 test asynchronous motor running with mechanical load at torque value of 0.5 Nm and set at half of maximum shaft revolution speed in presence of fault simulated with a 100 Ohm resistor	103376
11	11 - m1_mechanically_imbalanced_electrically_50_ohm_fault_half_speed	Mechanical fault (shaft misalignment) and Electrical fault	M1 test asynchronous motor running without mechanical simulation load not power supplied, shaft misalignment and set at half of maximum shaft revolution speed in presence of fault simulated with a 50 Ohm resistor	150375
12	12 - m1_mechanically_imbalanced_electrically_100_ohm_fault_half_speed	Mechanical fault (shaft misalignment) and Electrical fault	M1 test asynchronous motor running without mechanical simulation load not power supplied, shaft misalignment and set at half of maximum shaft revolution speed in presence of fault simulated with a 100 Ohm resistor	105232
13	13 - m1_mechanically_imbalanced_electrically_150_ohm_fault_half_speed	Mechanical fault (shaft misalignment) and Electrical fault	M1 test asynchronous motor running without mechanical simulation load not power supplied, shaft misalignment and set at half of maximum shaft revolution speed in presence of fault simulated with a 150 Ohm resistor	101613
14	14 - m1_mechanically_imbalanced_electrically_50_ohm_fault_load_0.5Nm_half_speed	Mechanical fault (shaft misalignment) and Electrical fault	M1 test asynchronous motor running with mechanical load at torque value of 0.5 Nm, shaft misalignment and set at half of maximum shaft revolution speed in presence of fault simulated with a 50 Ohm resistor	150463
15	15 - m1_with_m2_mechanicaly_imbalanced_on_background_half_speed	Normal operation High noise present	M1 test asynchronous motor running without mechanical load set at half of maximum shaft	102111

			revolution speed, second motor running with vibrations placed in proximity	
16	16 - m1_mechanically_imbalanced_with_m2_normal_on_background_half_speed	Mechanical fault (shaft misalignment) and Noise present	M1 test asynchronous motor running with mechanical simulation load not power supplied, shaft misalignment, set at half of maximum shaft revolution speed, second motor running placed in proximity	153466
17	17 - m1_mechanically_imbalanced_with_m2_mechanicaly_imbalanced_on_background_half_speed	Mechanical fault (shaft misalignment) and High noise present	M1 test asynchronous motor running with mechanical simulation load not power supplied, shaft misalignment, set at half of maximum shaft revolution speed, second motor running with vibrations placed in proximity	155047
18	18 - m1_load_0.5Nm_m2_mechanically_imbalanced_on_background_half_speed	Normal operation with load and High noise present	M1 test asynchronous motor running with mechanical load at torque value of 0.5 Nm, set at half of maximum shaft revolution speed, second motor running with vibrations placed in proximity	104468
19	19 - m1_mechanically_imbalanced_load_0.5Nm_m2_mechanically_imbalanced_on_background_half_speed.	Mechanical fault (shaft misalignment) with load and High noise present	M1 test asynchronous motor running with mechanical load at torque value of 0.5 Nm, shaft misalignment, set at half of maximum shaft revolution speed, second motor running with vibrations placed in proximity	151017
20	20 - m1_electrically_50_ohm_fault_m2_imbalanced_on_background_half_speed	Electrical fault and High noise present	M1 test asynchronous motor running without load and set at half of maximum shaft revolution speed in presence of fault simulated with a 50 Ohm resistor, second motor running with vibrations placed in proximity	111743
21	21 - m1_electrically_50_ohm_fault_load_0.5Nm_m2_mechanically_imbalanced_half_speed	Electrical fault with load and High noise present	M1 test asynchronous motor running with mechanical load at torque value of 0.5 Nm, and set at half of maximum shaft revolution speed in presence of fault simulated with a 50 Ohm resistor, second motor running with vibrations placed in proximity	107380
22	22 - m1_electrically_100_ohm_fault_m2_mechanically_imbalanced_half_speed	Electrical fault and High noise present	M1 test asynchronous motor running without load and set at half of maximum shaft revolution speed in presence of fault simulated with a 100 Ohm resistor, second motor running with vibrations placed in proximity	104434
23	23 - m1_electrically_100_ohm_fault_load_0.5Nm_m2_mechanically_imbalanced_half_speed	Electrical fault with load and High noise present	M1 test asynchronous motor running with mechanical load at torque value of 0.5 Nm, and set at half of maximum shaft revolution speed in presence of fault simulated with a 100 Ohm resistor, second motor running with vibrations placed in proximity	108170
24	24 - m1_electrically_150_ohm_fault_m2_imbalanced_on_background_half_speed	Electrical fault and High noise present	M1 test asynchronous motor running without load and set at half of maximum shaft revolution speed in presence of fault simulated with a 150 Ohm resistor, second motor running with vibrations placed in proximity	102918
25	25 - m1_mechanically_imbalanced_electrically_50_ohm_fault_m2_imbalanced_on_background_half_speed	Mechanical fault (shaft misalignment), Electrical fault and High noise present	M1 test asynchronous motor running with mechanical simulation load not power supplied, shaft misalignment, speed in presence of electrical fault simulated with a 50 Ohm resistor, set at half of maximum shaft revolution speed, second motor running with vibrations placed in proximity	102953
26	26 - m1_mechanically_umbalanced_electrically_50_ohm_fault_load_0.5Nm_m2_umbalanced_on_background_half_speed	Mechanical fault (shaft misalignment), with load, Electrical fault and High noise present	M1 test asynchronous motor running with mechanical simulation load at 0.5 Nm, shaft misalignment, speed in presence of electrical fault simulated with a 50 Ohm resistor, set at half of maximum shaft revolution speed, second motor running with vibrations placed in proximity	146328
27	27 - m1_mechanically_imbalanced_electrically_100_ohm_fault_m2_imbalanced_on_background_half_speed	Mechanical fault (shaft misalignment), Electrical fault and High noise present	M1 test asynchronous motor running with mechanical simulation load not power supplied, shaft misalignment, speed in presence of electrical fault simulated with a 100 Ohm resistor, set at half of maximum shaft revolution speed, second motor running with vibrations placed in proximity	110081
28	28 - m1_mechanically_imbalanced_electrically_100_ohm_fault_load_0.5Nm_m2_imbalanced_on_background_half_speed	Mechanical fault (shaft misalignment), with load, Electrical fault and High noise present	M1 test asynchronous motor running with mechanical simulation load at 0.5 Nm, shaft misalignment, speed in presence of electrical fault simulated with a 100 Ohm resistor, set at half of maximum shaft revolution speed, second motor running with vibrations placed in proximity	136361
29	29 - m1_mechanically_imbalanced_electrically_150_ohm_fault_m2_imbalanced_on_background_half_speed	Mechanical fault (shaft misalignment), Electrical fault and High noise present	M1 test asynchronous motor running with mechanical simulation load not power supplied, shaft misalignment, speed in presence of electrical fault simulated with a 150 Ohm resistor, set at half	102432

			of maximum shaft revolution speed, second motor running with vibrations placed in proximity	
30	30 - m1_mechanically_imbalanced_electrically_150_ohm_fault_m2 _imbalanced_on_background_rotated_half_speed	Mechanical fault (shaft misalignment), Electrical fault and High noise present	M1 test asynchronous motor running with mechanical simulation load not power supplied, shaft misalignment, speed in presence of electrical fault simulated with a 100 Ohm resistor, set at half of maximum shaft revolution speed, second motor running with vibrations at half speed placed in proximity	101405

Note:

m1 is the tested motor

m2 is a second motor for obtaining a more complex testing environment (eg. supplemental noise source).