Learning set:

* Bearing1\_1
  + 2803 files
  + Start: 9 hr 39 min 39 sec
  + End: 17 hr 26 min 39 sec
* Bearing1\_2
  + 871 files
  + Start: 8 hr 47 min 5 sec
  + End: 11 hr 12 min 5 sec
* Bearing1\_6
  + 2448 files
  + Start: 9 hr 2 min 51 sec
  + End: 15 hr 50 min 41 sec
* Bearing1\_7
  + 2259 files
  + Start: 8 hr 2 min 37 sec
  + End: 14 hr 18 min 57 sec

Test set:

* Bearing1\_3
  + 1802 files
  + Start: 8 hr 33 min 1 sec
  + End: 13 hr 33 min 11 sec
* Bearing1\_4
  + 1139 files
  + Start: 8 hr 8 min 0 sec
  + End: 11 hr 17 min 40 sec
* Bearing1\_5
  + 2302 files
  + Start: 9 hr 20 min 24 sec
  + End: 15 hr 43 min 54 sec

Vibration is indirect conditional monitoring (CM) data

Need a partially observed state process model (model based on indirectly observed state processes)

Feature extraction: We may use FT and wavelet transform to compute indicators that can represent the health state of the system directly from indirect CM data. This would allow us to use models based on direct CM data.

Kalman filter: can estimate state of system by combining measurements from different sources that may be subject to noise

* Used when:
  + Variables of interest can only be measured indirectly
  + Measurements are available from various sensors but might be subject to noise