REMAINING USEFUL LIFE PREDICTION BASED ON A MULTI-SENSOR DATA FUSION MODEL

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MOTIVATION

- Industries rely on predictive maintenance to reduce downtime and costs.
- Key challenge: Predict Remaining Useful Life (RUL) of machinery using multiple sensors. - Goal: Develop
- A robust RUL prediction system using data fusion techniques.

ROADMAP

- MTP 1: Data Generation & Collection
  - Selection of Sensors, which are applicable in our project.

    [Sensors can be commercial or prepared using lab equipments]
  - Generate degradation data using campus lab[NSD Lab] equipments (motors, sensors)
  - Build a custom dataset resembling C-MAPSS format.
  - Calibrate and validate sensor outputs (vibration, temperature, current, voltage)

ROADMAP(CONTINUED)

- MTP 2: Analysis & Modeling
  - Perform exploratory data analysis (EDA)
  - Apply statistical modeling and feature engineering
  - Develop particle filter–based data fusion model
  - Implement PSGS for sensor prioritization
  - Evaluate on both campus and public datasets

DATASET

- CMAPS dataset is the benchmarked data.
  - Contains training and testing data.
  - One data file is named FD0001.txt
  - The generated data would be similer.

- 1 Sensor or multiple sensors would be selected out of 21 sensors.
- Data would be generated on hardware level.

ANY QUESTIONS?