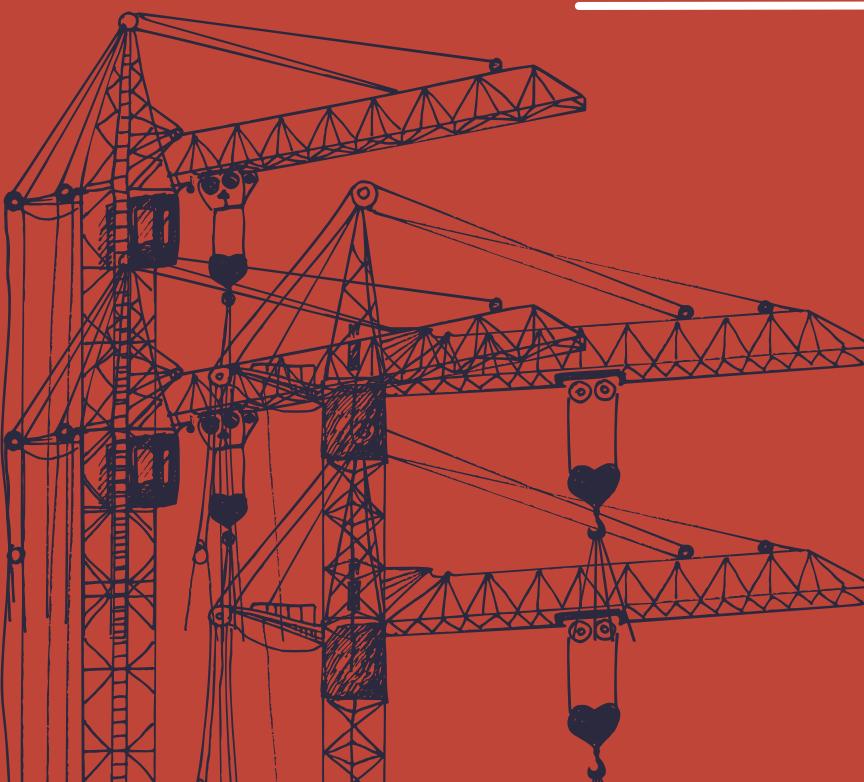


GROUP 18 PRESENTS

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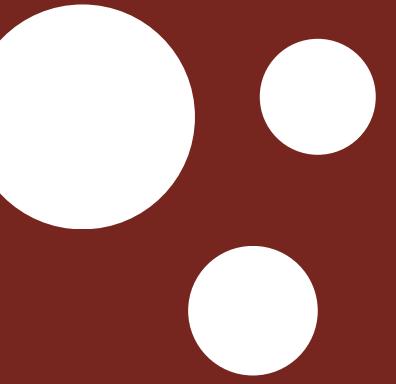
# Safe load Indicators using Inertial Sensor Analysis

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# Our Members

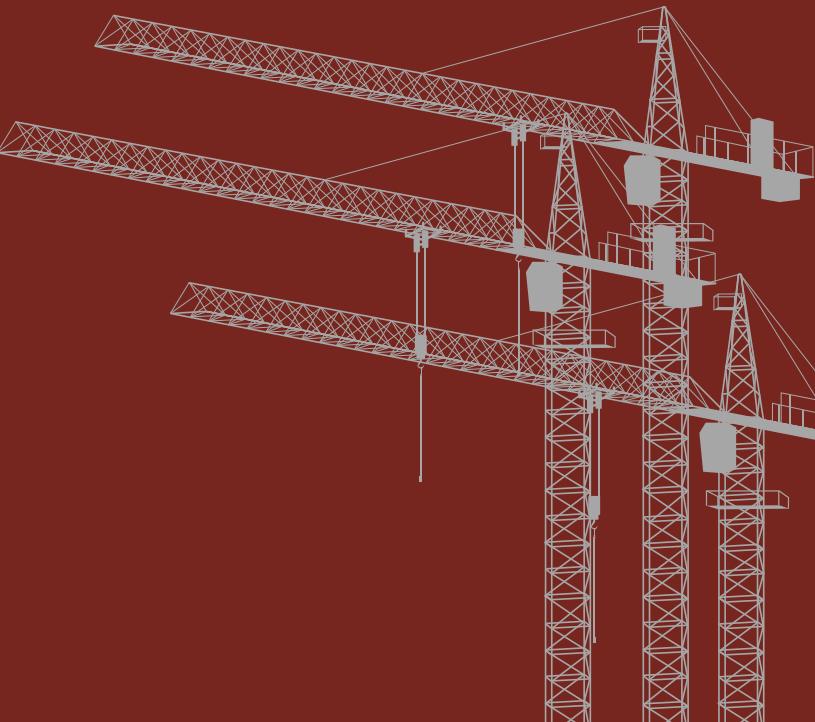
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**MOHAMMED ALTAF SALAH CHOGLE (08)**

**AAYUSH S. KADAM (20)**

**ALI KALSEKAR (73)**

**TANISH SANGHVI (50)**



# Problem Statement

- 
- LOAD CELL-BASED SLIS ARE COSTLY AND COMPLEX TO INSTALL
  - NO REAL-TIME FEEDBACK ON CRANE MOVEMENT OR HANDLING
  - UNSAFE OPERATIONS OFTEN GO UNDETECTED
  - INFLEXIBLE FOR DIFFERENT CRANE TYPES AND CONFIGURATIONS
  - LACKS AUTOMATED DATA LOGGING AND COST ESTIMATION
  - DOES NOT HAVE A PROPER DATASHEET



# Proposed Solution

- USE ACCELEROMETERS AND GYROSCOPES TO MONITOR CRANE MOTION IN REAL-TIME
- CALCULATE JERK TO DETECT SUDDEN OR UNSAFE MOVEMENTS
- ALERT OPERATORS VIA LEDS AND BUZZERS WHEN THRESHOLDS ARE CROSSED
- DISPLAYS LIVE SENSOR DATA TO WEB BASED DASHBOARD
- ESTIMATE OPERATIONAL COST BASED ON USAGE TIME
- PLAN TO INTEGRATE AI/ML MODELS FOR PATTERN RECOGNITION AND NOISE FILTERING
- OPTION TO COMBINE WITH LOAD CELLS FOR HYBRID SAFETY MONITORING



# Working

- 1. SENSOR INITIALIZATION
- 2. REAL-TIME DATA ACQUISITION
- 3. JERK CALCULATION
- 4. THRESHOLD COMPARISON
- 5. OPERATOR ALERT SYSTEM
- 6. DATA LOGGING
- 7. COST ESTIMATION



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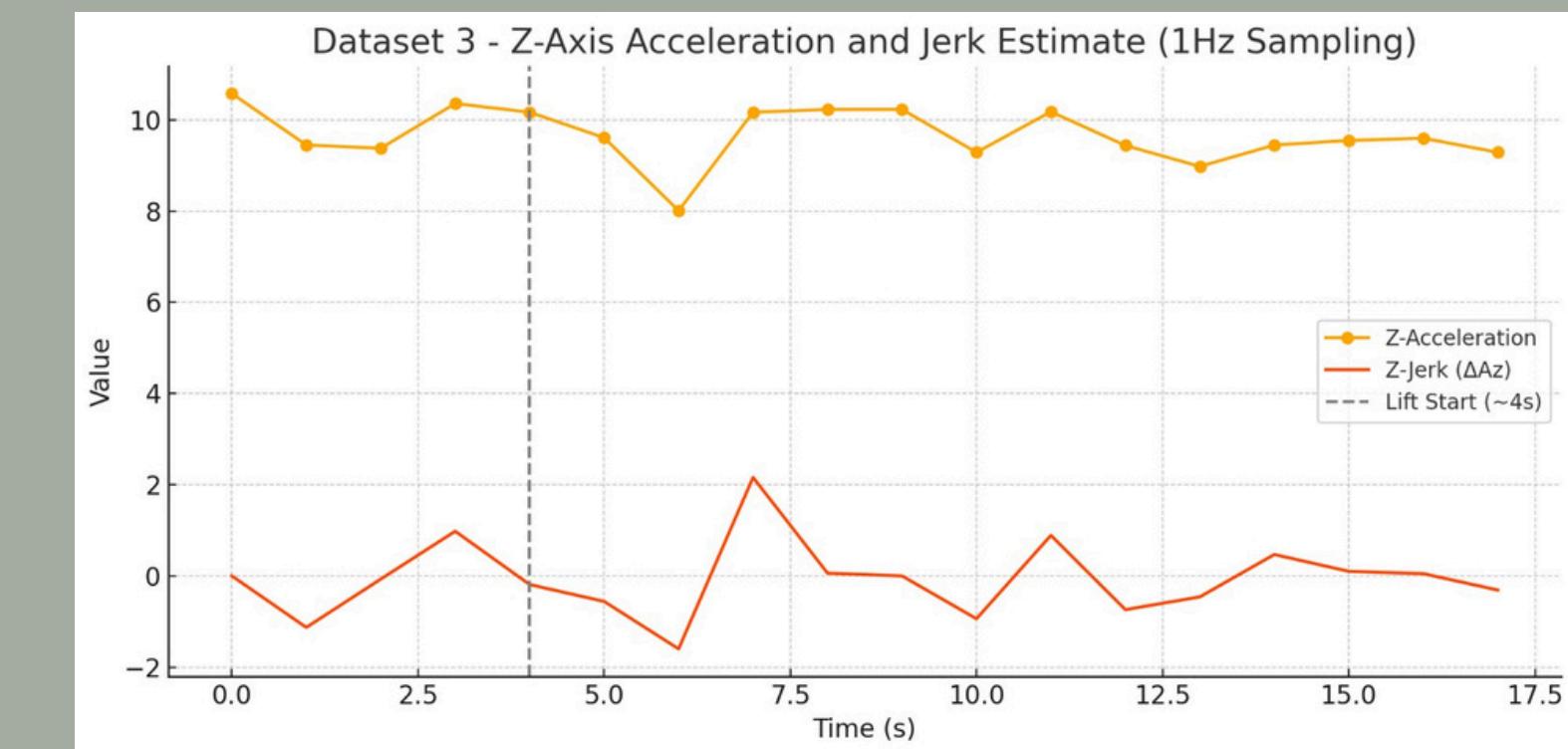
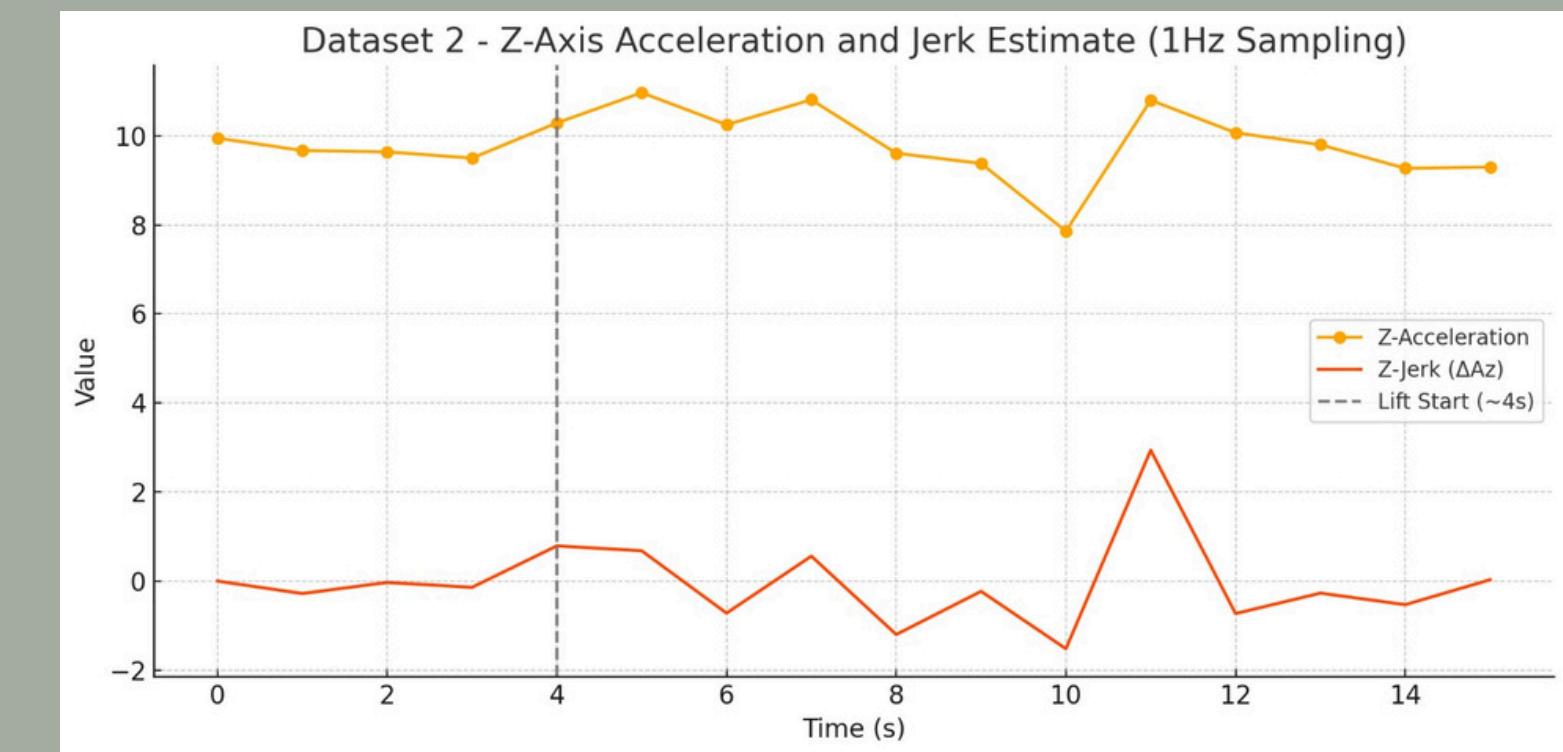
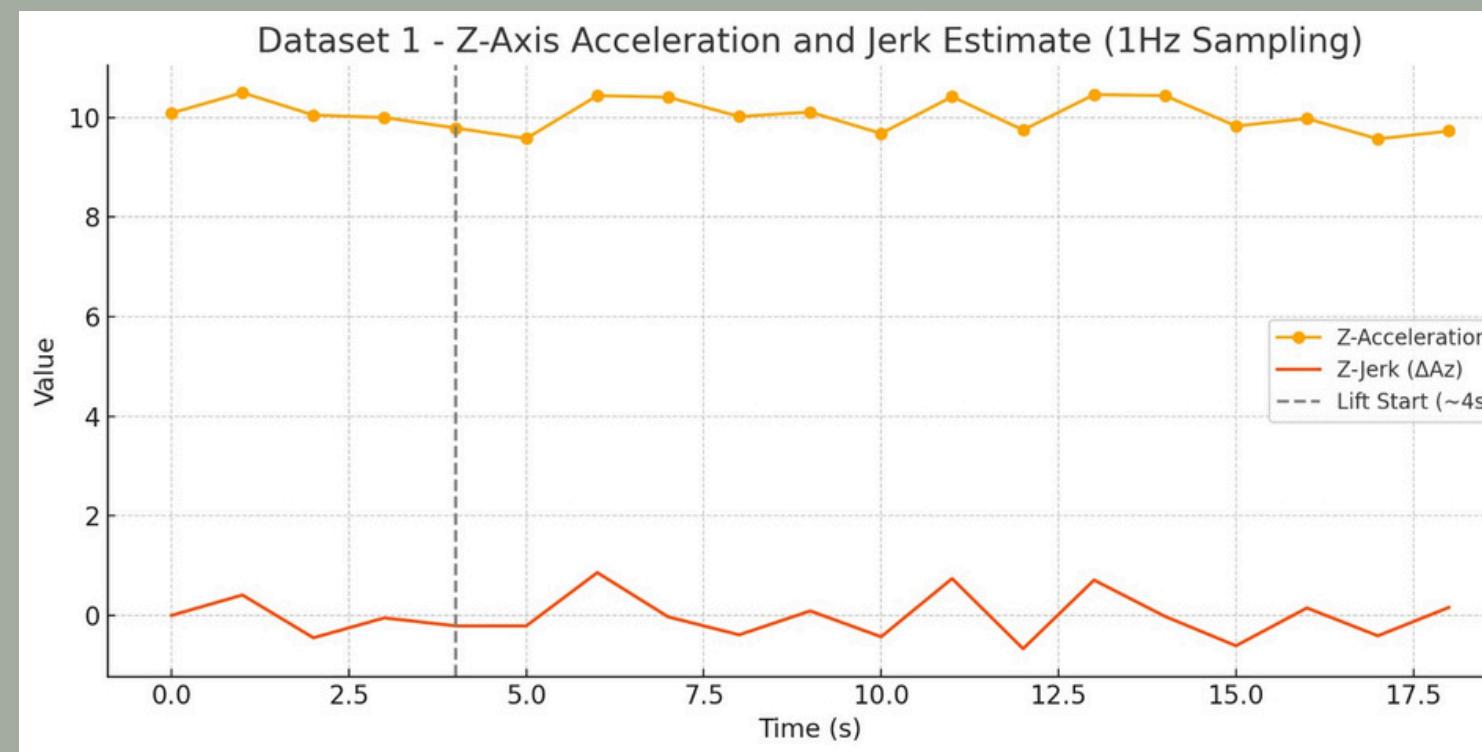
# Data Analysis

- SENSOR DATA COLLECTION
- JERK MONITORING
- THRESHOLD EVALUATION
- MULTI-CRANE DATASET BUILDING
- FUTURE AI/ML USE
- COMPARISON WITH LOAD CELL DATA



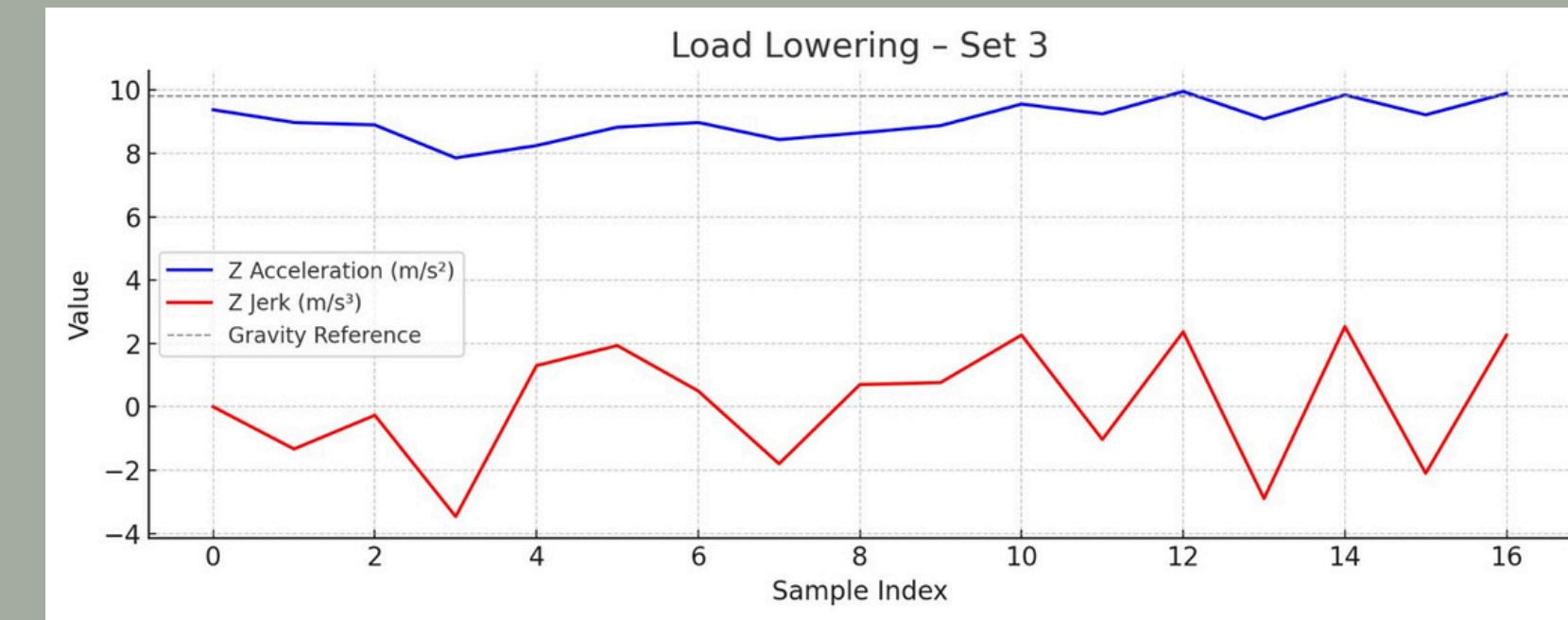
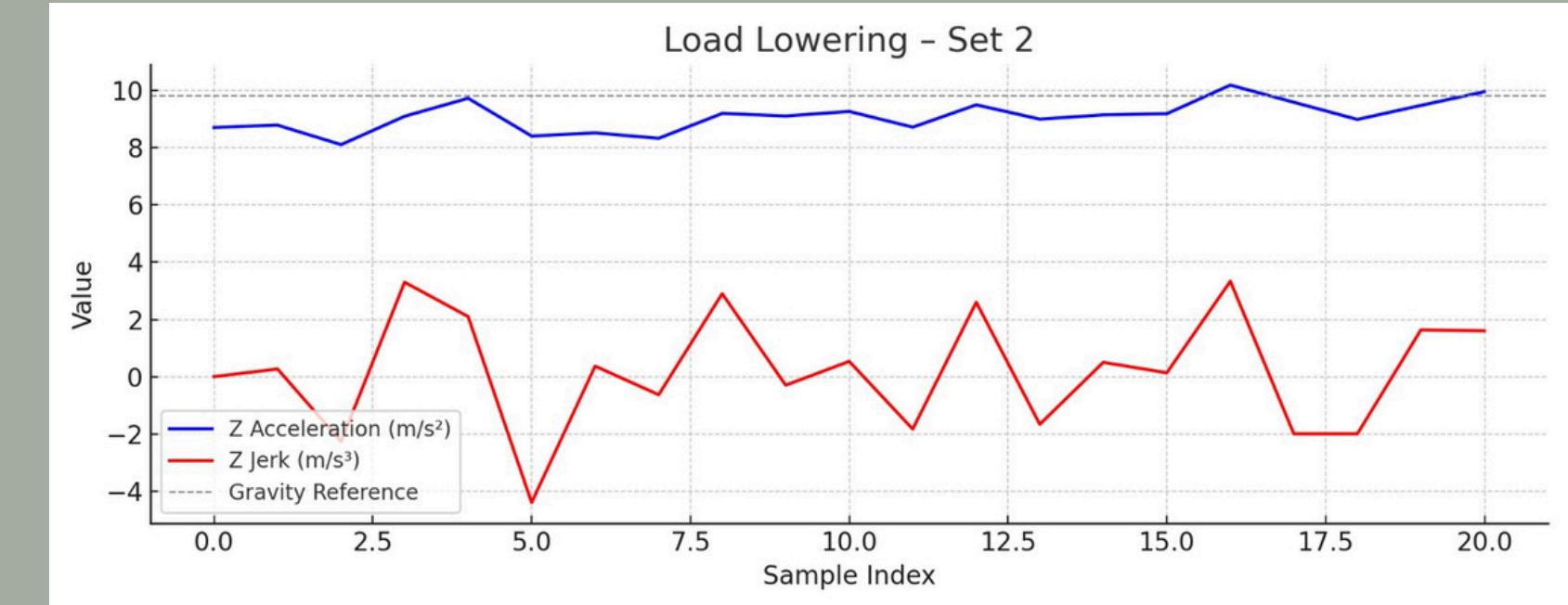
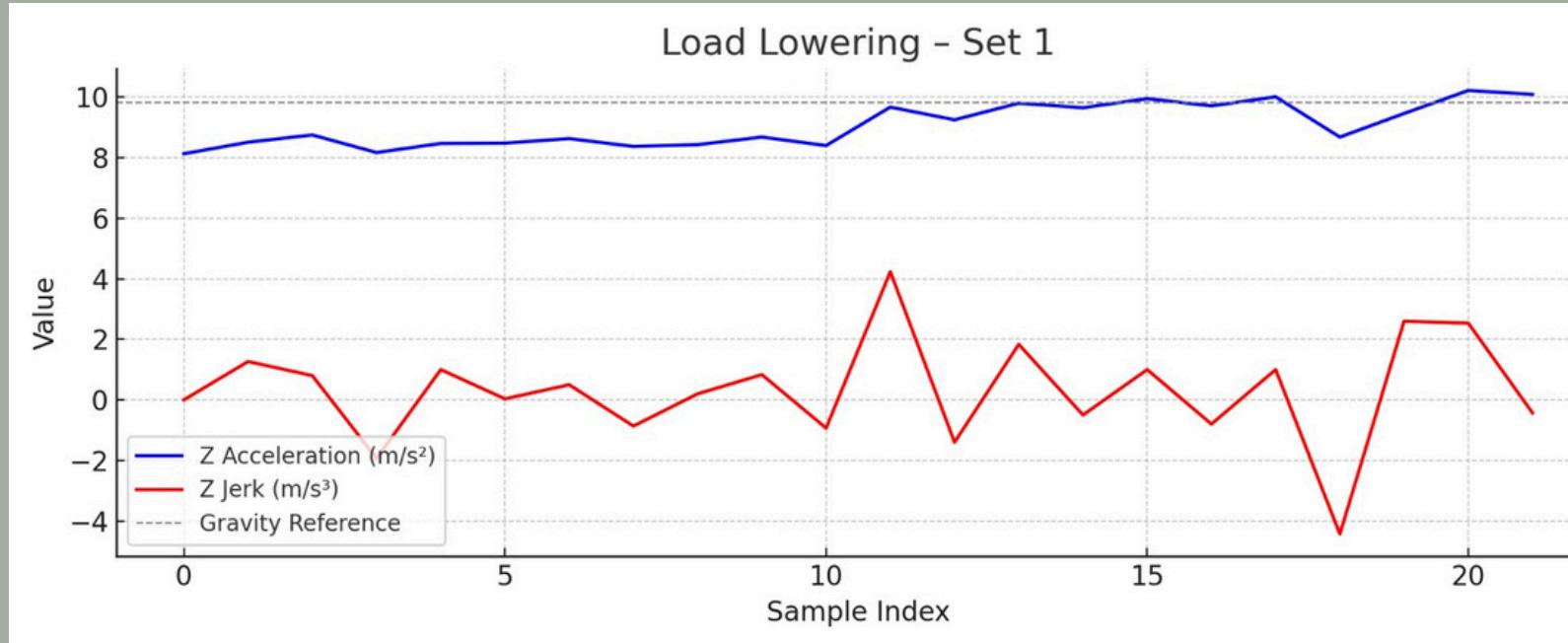


# Load Pick Graphs





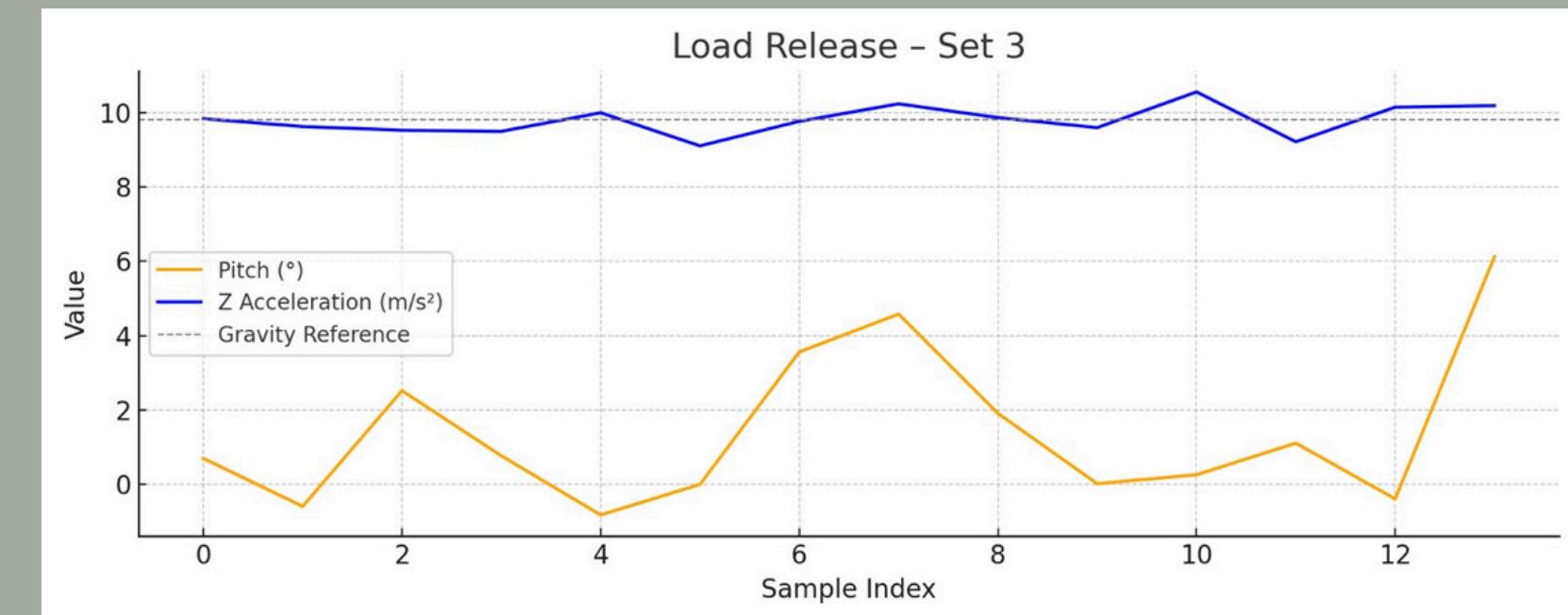
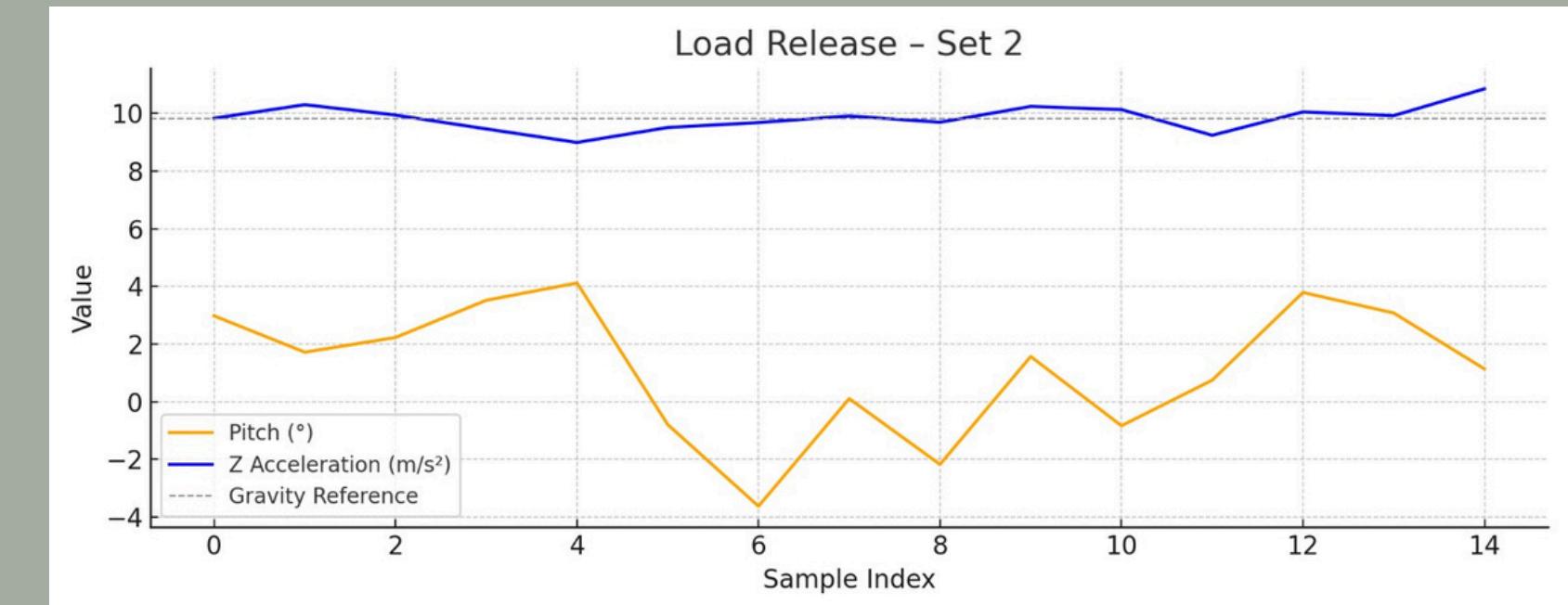
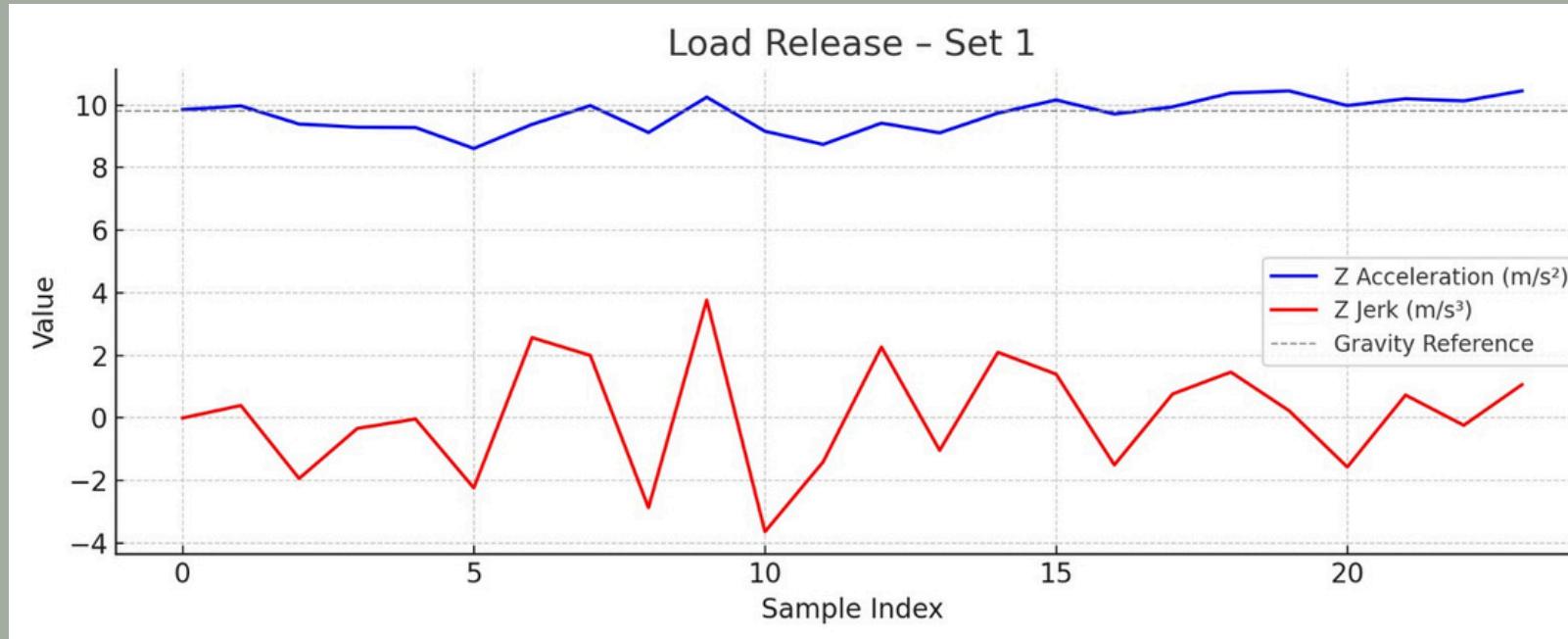
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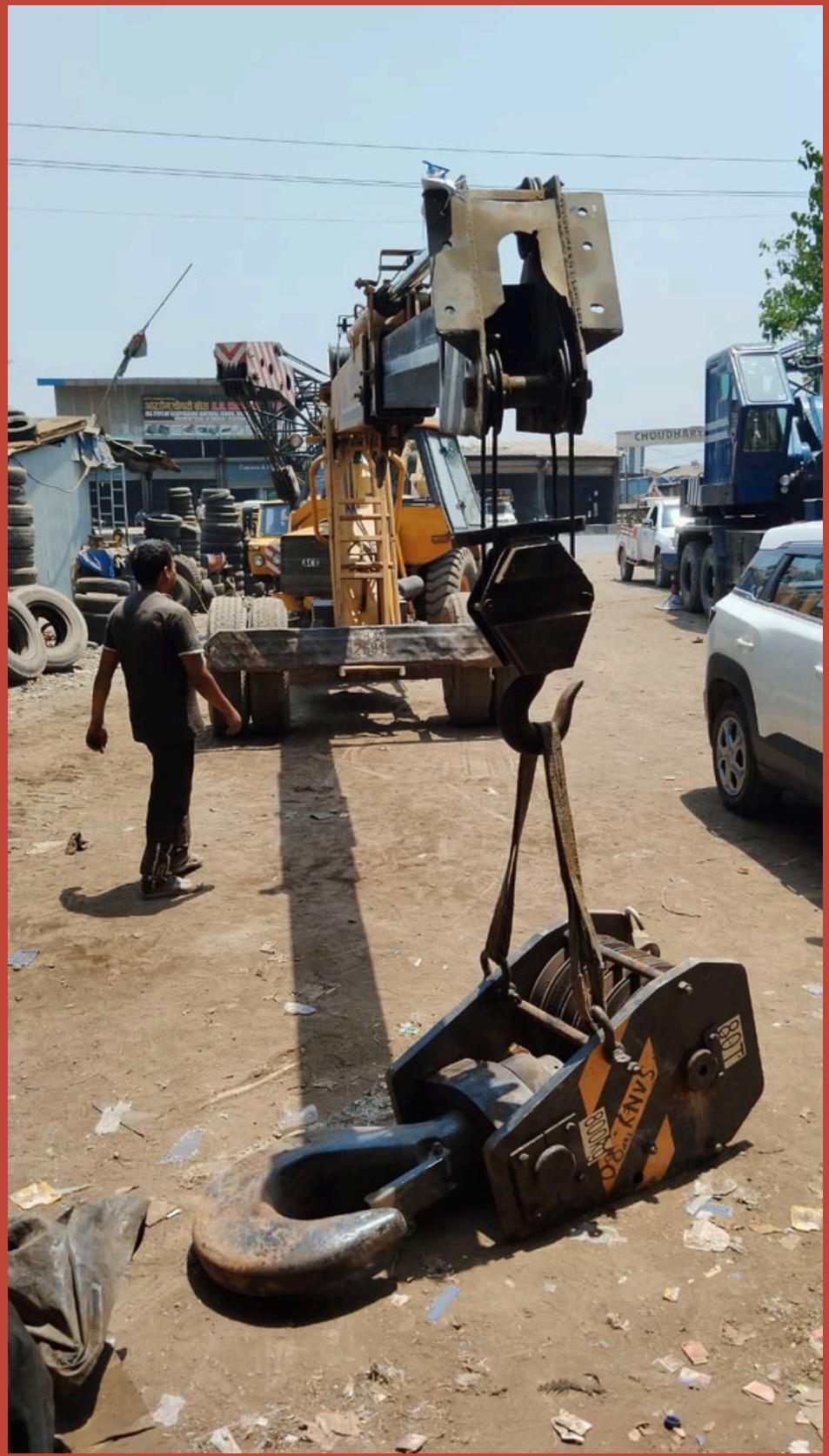




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# Load Release Graphs







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**Thank you for your  
attention!**



# Proposed Solution

PROBLEM STATEMENT  
PROPOSED SOLUTION  
WORKING  
DATA ANALYSIS

