**Biweekly Report**

**Name:** Tong Li

**Period:** April 21 - May 11, 2025

**Project:** Smart Maintenance Platform for Aero Engine Industrial Equipment

**Week 1: Core Function Development (April 21-27, 2025)**

During this week, I focused on implementing the core backend services for our predictive maintenance platform. My specific contributions included:

1. **Model Management System Development** (April 21-24)
2. **User Management Module** (April 24-27)
3. **Forecast Analysis System Development** (April 26-27)Time spent: 40 hours

**Week 2: System Testing Preparation (May 5-11, 2025)**

After the holiday break, this week was dedicated to preparing and beginning system testing:

1. **System Testing Preparation and Execution** (May 5-11)
    - Developed comprehensive system test plan with test scenarios
    - Created automated test scripts for core functionality validation
    - Implemented performance testing framework for load testing
    - Conducted initial system tests focusing on core functionalities
    - Documented test results and identified optimization opportunities
2. **Database Performance Optimization**
    - Implemented database query optimization for high-volume operations
    - Created additional indexes for frequently accessed data patterns
    - Developed database maintenance procedures for production environment

Time spent: 12 hours

**Completed WBS Items**

- 4.3.1 Core Function Development with Unit System (WBS Item, 40 hours) - 100% Complete
- 5.2 System Testing (WBS Item, 12 hours) - 10% Complete

**Challenges & Solutions**

The primary challenge I faced was designing an efficient system for handling high-volume sensor data while maintaining low-latency access for analytical queries. I addressed this by:

1. Implementing a multi-tier data storage architecture with hot/warm/cold data zones
2. Creating specialized indexes for time-series data with optimized compression
3. Developing a smart data aggregation system that pre-calculates common metrics

**Next Steps**

1. Continue system testing with expanded test scenarios
2. Address any issues identified during testing
3. Prepare for user acceptance testing
4. Finalize database optimization for production deployment
5. Create operational documentation for database management

**Total Hours Worked**

Total hours for this reporting period: 52 hours