

Predictive Maintenance Report

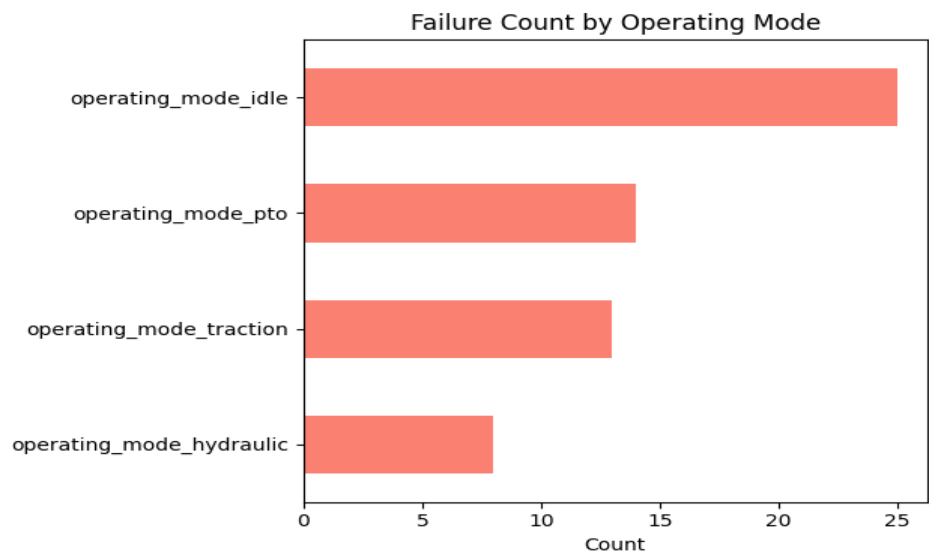
1. Executive Summary

This report outlines the results of predictive maintenance analysis using machine learning models. Sensor data from farming equipment was analyzed to estimate failure risks and predict remaining useful life (RUL). The findings enable proactive maintenance and reduce equipment downtime.

2. Dataset Summary

index	machine_id	vibration_level	motor_current	ambient_temp	motor_temp	torque	rpm	failure
count	32400.0	32400.0	32400.0	32400.0	32400.0	32400.0	32400.0	32400.0
mean	2.0	0.35	40.14	24.0	44.01	220.08	1848.81	0.0
std	0.82	0.12	14.9	3.0	4.97	59.34	250.05	0.04
min	1.0	0.0	5.0	12.0	24.39	80.0	849.1	0.0
25%	1.0	0.27	30.02	21.99	40.68	179.5	1681.25	0.0
50%	2.0	0.35	40.09	24.01	44.01	219.59	1851.61	0.0
75%	3.0	0.43	50.16	26.0	47.37	260.13	2017.88	0.0
max	3.0	0.8	97.45	36.61	64.96	450.0	2795.55	1.0

3. Failure Analysis



4. Conclusion

The models successfully predicted high-risk scenarios and estimated remaining useful life. The system can be deployed in production pipelines or integrated into dashboards for live equipment

monitoring.