Postgraduate Certificate in AI for Building Management

Predictive Maintenance for Smart Buildings

ABC Analysis: A method for categorizing inventory or assets based on their importance, with categories typically being "A" for high-value or high-use items, "B" for moderately important items, and "C" for low-value or low-use items. In the context of predictive maintenance, an ABC analysis can help prioritize which assets require the most attention.

Anomaly Detection: The process of identifying unusual or abnormal data points in real-time or historical data, often used as a key component of predictive maintenance to detect potential issues before they become critical.

Artificial Intelligence (AI): A broad term that refers to machines or software that can perform tasks that typically require human intelligence, such as learning, problem-solving, and decision-making. In the context of building management, AI can be used for various applications, including predictive maintenance.

Building Management System (BMS): A system that controls and monitors building services, such as HVAC, lighting, and security, with the goal of optimizing energy consumption, reducing costs, and improving occupant comfort.

Cyber-Physical Systems (CPS): A type of system that integrates physical processes with computational systems, often used in the context of building management to create a connected and automated environment.

Data Analytics: The process of examining and interpreting large data sets to extract meaningful insights, often used in predictive maintenance to identify trends and patterns that can help predict future failures.

Decision Trees: A type of machine learning algorithm that uses a tree-like model to represent decisions and their possible consequences, often used in predictive maintenance to help make decisions based on various factors.

Deep Learning: A subset of machine learning that uses neural networks with multiple layers to analyze and learn from data, often used in predictive maintenance to identify complex patterns and relationships.

Digital Twin: A virtual representation of a physical asset, often used in predictive maintenance to simulate and analyze the behavior of the asset under various conditions.

Edge Computing: A type of computing that takes place at the edge of the network, near the source of data, often used in predictive maintenance to process and analyze data in real-time.

Energy Management Systems (EMS): A system that monitors and controls energy consumption in a building, often integrated with a BMS to optimize energy use and reduce costs.

Fault Detection and Diagnosis (FDD): The process of detecting and diagnosing faults or anomalies in a

system, often used as a key component of predictive maintenance.

Internet of Things (IoT): A network of interconnected devices that can communicate and exchange data, often used in building management to create a connected and automated environment.

Machine Learning (ML): A type of artificial intelligence that enables machines to learn and improve from data, often used in predictive maintenance to identify patterns and make predictions.

Maintenance, Repair, and Operations (MRO): Activities that are necessary to keep a building or system running smoothly, including routine maintenance, repairs, and procurement of spare parts.

Predictive Maintenance (PdM): A type of maintenance that uses data analytics, machine learning, and other technologies to predict and prevent equipment failures, often used to optimize the performance and longevity of building systems and equipment.

Reliability-Centered Maintenance (RCM): A methodology for optimizing maintenance activities based on the criticality of equipment and their potential failure modes, often used as a complementary approach to predictive maintenance.

Root Cause Analysis (RCA): The process of identifying the underlying causes of a problem or failure, often used in predictive maintenance to prevent future failures.

Sensors: Devices that detect and measure physical phenomena, such as temperature, humidity, and vibration, often used in building management to collect data for predictive maintenance.

Supervised Learning: A type of machine learning that uses labeled data to train a model to make predictions, often used in predictive maintenance to identify patterns and make predictions based on historical data.

Unsupervised Learning: A type of machine learning that uses unlabeled data to identify patterns and relationships in the data, often used in predictive maintenance to identify anomalies or clusters of data.

Vibration Analysis: The process of analyzing the vibration patterns of equipment to identify potential failures, often used in predictive maintenance to detect early signs of wear and tear.

Wearable Devices: Devices that can be worn on the body, such as smartwatches and fitness trackers, often used in building management to collect data on occupant behavior and comfort.

This glossary provides a comprehensive overview of key terms and concepts related to predictive maintenance for smart buildings. Understanding these terms is essential for professionals working in building management, as well as those pursuing the Postgraduate Certificate in AI for Building Management. Familiarity with these terms will enable learners to effectively apply predictive maintenance strategies and technologies to optimize building performance and reduce costs.