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AI and Autonomous Systems for Advanced Manufacturing

In this presentation, the audience will gain valuable insights into the transformative role of AI and autonomous systems in advanced manufacturing. The AI in the manufacturing market is on a trajectory to reach an astounding USD 68.36 billion by 2032, propelled by technological innovations, economic incentives, and organizational strategies. Key takeaways include the increasing use of AI and Machine Learning for predictive maintenance, which leverages time-series data to preempt equipment failures, thereby reducing downtime and extending machine lifespan. AI's role in condition-based monitoring is also pivotal, shifting the paradigm from scheduled to real-time maintenance based on actual equipment conditions. In quality control, AI is replacing manual inspections with machine vision systems for defect detection and product standardization. Anomaly detection algorithms are enhancing product quality by identifying deviations in production lines. The application of Natural Language Processing in analyzing maintenance logs and technical documentation provides actionable insights for both preventive and corrective actions. AI-driven ticket support systems are streamlining operational efficiency by automating issue categorization and resolution. Lastly, the importance of evaluating ROI for AI projects must be considered. A multi-faceted approach that considers immediate financial gains and long-term strategic benefits is essential for informed decision-making. Pilot projects serve as crucial test beds, and an agile approach is recommended for ongoing adjustments. Overall, AI is not just a technological add-on but a fundamental shift towards smarter, more efficient, and reliable manufacturing processes.

Keywords: Artificial Intelligence (AI), Advanced Manufacturing, Predictive Maintenance Condition-Based Monitoring (CBM), Machine Vision (MV), Natural Language Processing (NLP)

Biography:

Mr. Bidyut Sarkar has two decades of experience, draws from a rich background at IBM, excelling in AI and analytics. His contributions include devising IT solutions to combat counterfeit pharmaceuticals and implementing AI/ML predictive demand strategies for US-based pharmaceutical and manufacturing firms. Leveraging AI, he played a vital role in enhancing global cybersecurity and ensuring medication authenticity. Having worked across the Americas, Europe, the Middle East, and Australia, Sarkar offers unique insights into diverse organizational challenges, solidifying his dedication to tackling critical issues through advanced AI technologies. His strategic prowess places him at the forefront of innovative AI applications worldwide.