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AI AND CIVIL ENGINEERING: BRIDGING INFRASTRUCTURE AND INTELLIGENT

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Abstract

This work explores the relationship between civil engineering methodologies and the adoption of artificial intelligence within traditional infrastructure and construction environments. Drawing on professional experience with large-scale bridge rehabilitation, pavement preservation programs, and complex structural inspections at the Connecticut Department of Transportation, the study highlights how established engineering practices—project management, inspection protocols, and quality assurance—can guide the structured integration of AI. Insights from research on real-time embodied carbon tracking are used to demonstrate how intelligent systems can enhance decision-making, streamline workflows, and advance sustainability goals. Case studies from engineering and business applications illustrate practical pathways for AI adoption for professionals without technical backgrounds. The aim is to show how engineering discipline supports the effective use of emerging technologies and to outline opportunities for integrating AI into fields beyond software-development.

Key Takeaways:

1. *Applying engineering methodologies to AI adoption through project management and quality assurance frameworks.*

2. *Practical pathways for AI integration without technical expertise using real-world case studies to enhance decision-making and streamline workflows.*
3. *Actionable strategies for traditional industries with clear opportunities for beginning AI implementation.*

Keywords:
Firm Performance, Infrastructure Development, Project Management Frameworks, Artificial Intelligence