

# SMART CONSTRUCTION: APPLICATION OF DIGITAL TECHNOLOGIES FOR CONSTRUCTION SITE MONITORING

The Research Group of Construction Management and Technology from the School of Engineering at the Federal University of Bahia has been developing several studies about digital technology applications for construction project monitoring, especially drones, in the last few years. This lecture will present advanced studies about drones, artificial intelligence, and mobile devices for construction monitoring, especially the Smart Inspects platform, which was designed to integrate different uses of these technologies to support project monitoring, providing information to aid decision-making for construction managers. The first module uses UAS as a data acquisition technology to monitor on-site safety conditions and a computerized system to support data processing, analysis, and storage. The scope of the system is limited to safety requirements related to the external construction area due to the limitations of drones. A second module about safety is the identification of non-conformities specific to guard rails using artificial intelligence. A third module refers to the automated recognition of constructive failures and pathologies in the execution of facades using UAS and Machine Learning algorithms. Finally, a fourth module refers to building roof maintenance inspection using UAS and artificial intelligence.



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Dayana Bastos Costa has Ph.D. in Civil Engineering - Construction Management. She has industrial experience in the Brazilian construction sector and international experience in research. She was a visiting researcher at Salford University and Georgia Institute of Technology-USA. In 2008, Dr. Costa joined the Structural and Construction Engineering Department of the School of Engineering at the Federal University of Bahia-Brazil. Dr. Costa's research area involves construction management, especially lean construction, production management, performance measurement and benchmarking, and sustainable management in construction, focusing on reducing environmental impacts on construction sites. Currently, she focuses her research on integrating digital technologies into the construction management process. Since 2009, Dr. Costa has been the principal investigator in several research projects the Brazilian governmental agencies and industry partnerships granted. As a result of these research projects, she published 41 journal papers, 35 book chapters, two edited conference proceedings, one edited book, and more than 130 conference papers. She supervised more than 25 doctoral and master theses.

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