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ZIGURAT's First Global AI Congress for Architecture, Engineering and Construction Draws Over 5,000 Professionals

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The 1st ZIGURAT AI Congress, organised by the ZIGURAT Institute of Technology, welcomed over 5,000 registered professionals from across the globe.

The online congress, held from 13 to 15 May, focused on the application of Artificial Intelligence in the AECO sector (Architecture, Engineering, Construction and Operations), with sessions conducted in Spanish, Portuguese, and English from the experts Lilian Ho, Varun Bhartiya, Jordana de Castro, Ítalo Guedes, Rogério Lima, Antônio Cavalcanti, Fernando Iglesias, Carles Farré and Francisco Carmona.

Over the course of three days, nine international experts presented practical insights and technological developments that demonstrate AI's real impact on the entire project lifecycle. They shared applied experiences of how artificial intelligence is already transforming design, construction, planning, and maintenance processes across the AECO sector.

Transformation versus Digitisation

In the Spanish session, Fernando Iglesias, Head of Innovation at Kronos and Director of the Máster en Inteligencia Artificial para Arquitectura y Construcción at ZIGURAT, clarified the distinction between digitalisation and real transformation:
"Digitalising means converting an existing process into a digital one; transformation means completely rethinking it through technology."

He emphasised that *"AI is transforming how we conceive urban and architectural design. Tools like Autodesk Forma or TestFit allow us to evaluate dozens of options in seconds and make better-informed decisions from the very beginning."*

Carles Farré, co-founder of AECOTECH, demonstrated how custom automation using agents powered by generative AI is enabling more traceable and objective workflows on construction sites.
Meanwhile, Francisco Carmona, Director of Infrastructure at Quantia Ingeniería y Consultoría and professor of the ZIGURAT Masters in IA, BIM Management and BIM Management en Ingeniería Civil y GIS, introduced a predictive energy consumption model developed with machine learning using platforms such as KNIME.

The session concluded with a real case study by alumni from ZIGURAT programmes, who integrated AI, 4D BIM planning, and collaborative tools such as Microsoft 365 in a building project in Porto.

Interoperability, Computer Vision and Ethical Challenges

The Portuguese session featured Ítalo Guedes, Academic Director of the Master em Inteligência Artificial para Arquitetura e Construção at ZIGURAT and a professor at the Federal University of Pernambuco. He gave a live demonstration of training computer vision models to detect the use of personal protective equipment on site:
"AI allows us to go beyond identifying risks — it enables real-time prevention through processed data," he explained.

Rogério Lima, co-director of the same master's programme, presented tools like ALICE Technologies and ConstruFlow, showing how AI can be applied across all stages of project management.

Jordana de Castro Rosa, BIM Manager at WSP, showcased two solutions developed by her team: AI2Speckle and Ecomatic, which automate design processes and integrate sustainability data into Revit models using spreadsheet inputs.

Antônio Cavalcanti closed the second session with a reflection on AI's social impact: *"Artificial intelligence will not replace jobs — but it will replace those who don't know how to use it,"* he warned.

"Adopting AI is essential"

The English-language session brought together three professionals with extensive international experience in large-scale projects. Lilian Ho, Digital & BIM Lead at AECOM and Academic Director of ZIGURAT's Master's in Artificial Intelligence for Architecture & Construction, explained: *"Generative AI can produce multiple optimised design options in seconds, enabling more creative, sustainable and efficient decisions from the outset."*

"Over the past decade, we've accelerated workflows by up to 1000%. But it's not about the number — AI is here, and adopting it is essential," she added.

Jordana de Castro described how her team trained models using tools such as Stable Diffusion to convert AI-generated images into BIM models enriched with embedded carbon data: *"Our goal is to transform images into usable data so that every design decision is based on traceability and sustainability."*

Varun Bhartiya, CEO of nCircle Tech, shared the quote from Nvidia's founder: *"AI won't take your job — but*

someone using AI will." He showcased how AI has drastically reduced conversion times from laser scans to BIM models:
"We've gone from five days of manual work to just one day using AI-based automation. In many cases, modelling time has been cut by 30% thanks to AI alone."

He also demonstrated conversational AI tools for data visualisation in Power BI and AI-powered image generation to support rapid conceptual design iterations.

Conclusion: Real Adoption and Future Challenges

All speakers agreed that AI is already delivering tangible results in energy efficiency, productivity, and quality across the built environment. Varun Bhartiya summed it up:
"Artificial Intelligence is no longer the future — it's already transforming our sector. Rapid adoption is essential to remain competitive and lead this shift."

Fernando Iglesias closed with a reminder: "AI forces us to rethink architectural design through a transversal, integrated and strategic lens."