ABSTRACTS

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A case study of using Solidworks software to simulate an assembly for 3D printing and creating a digital twin of Wlkata robots in laboratory conditions

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Abstract: This article deals with the use of SolidWorks software to simulate the assembly of an assembly intended for 3D printing, as well as the creation of a digital twin of the WLKATA robots under laboratory conditions. The simulation allowed for efficient testing of the conveyor belt design before production, minimizing design errors and reducing material consumption. The SolidWorks simulation results were then validated by 3D printing using a Prusa XL printer and tested in integration with WLKATA's educational robots. Part of the process included optimization of the parts for the manufacturing tolerances of FDM printing, with major flaws identified and corrected before actual printing. In addition to simulation and printing, a digital simulation of the assembly in RoboDK software was also carried out to verify the compatibility of the mechanisms. The results showed that the combination of simulation in SolidWorks and RoboDK provides an efficient approach to the design and testing of mechanical assemblies while minimising manufacturing costs and environmental footprint.

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