OPEN ACCESS Freely available online

International Journal of Advancements in Technology

Commentary

Short Note on Virtual Reality Techniques in Robotic Technology

Carneiro Lopes*

Department of Robotic Engineering, University of Stuttgart, Stuttgart, Germany

INTODUCTION

Advances in robot design are evident and increasing year by year, resulting in current and potential improvements. However, economic and social impacts are difficult to assess and quantify without costly and time consuming physical on site testing. This paper presents a methodology for simulating robotic construction technology, namely drones, using a virtual reality environment. Our hypothesis is that virtual reality simulations of robot designs may (H1) improve the accuracy of construction time and cost predictions and (H2) enable the detection of design problems. The examination begins with an evaluation of the literature on drones, robotic arms, hybrid automated design solutions, and virtual reality design simulations, and summarizes the robotic techniques currently predominantly used in academic research on component assembly. Then, to analyze different approaches and different scenarios of robotic construction simulation methodologies, we propose construction simulation methodologies applied to the three building elements. Construction simulations are tested, data analyzed and compared to traditional construction methods with a focus on construction time and cost.

This paper is part of an ongoing study on the use of robotics in the construction industry, investigating the potential use of robotics (drones and robotic arms) in new building contexts and using new methodologies. Including the topic covered in this article, Virtual Reality (VR) simulation of drone construction methodologies, is presented as a first step to anticipate and avoid future problems in real world robot construction. Robotic design has the potential to change current design paradigms. The new paradigm will push the construction industry out of the 3rd industrial revolution and bring it closer to the level of automation in other more technologically advanced sectors such as shipping and the automotive industry. These industries have been using robots for a variety of tasks with far-reaching results for decades. For example, in the automotive industry, luxury brand Lexus has been using fully robotized assembly lines since 2000.

Despite the ongoing transition of many industries to the third or fourth industrial revolution, the construction industry is still stuck in the traditional slow, costly and error-prone construction process. In the current economic and environmental climate, a more technological approach to construction is driving the construction process forward by introducing more efficient and sustainable methods and allowing for diversity and innovation in built solutions. It is important to start transforming. Over the last few decades, there have been major developments in the world of robotics, and technological advances have been used for a wide variety of tasks. Today, robots can take many forms and be deployed at different scales, such as domestic, industrial, medical, security/defense, educational or recreational, depending on their main function and task. These robots include, but are not limited to, humanoid robotics, animal robotics, drones, robotic arms, and purpose designed exoskeletons.

Despite many technological advances in the field of robotics, with a few exceptions, the use of robots in most industries still relies on human collaboration in hybrid assembly line processes. After the second industrial revolution, most tasks in manufacturing were organized and designed according to certain principles, such as specialization, simplification, and standardization, to make the tasks easier and repetitive for workers, thereby making them more efficient. Hybrid assembly lines, which are still widely used today in automotive, shipyards, textiles and other industries, have improved product quality, production flexibility, cost savings, ergonomics, improved robotics, and advanced It has the advantage of meeting the industrial demand for flexible production solutions. Added to this is the human ability to quickly resolve issues and correct them in the field when checking product quality and safety. In the automotive industry, for example, assembly lines are being designed with robotics influences, humans are still heavily involved in assembly projects. Industrial robots are used in many production lines and processes, but close collaboration between robotics and humans must be perfected to minimize risk to human life.

So far, robotics has now no longer been capable of update human talents entirely, even though an answer may be executed way of means of combining the capacities of each to create a wonderful business environment. Regarding robot production in AEC, numerous robot gears were used, ranging from “guide

Correspondence to: Carneiro Lopes, Department of Robotic Engineering, University of Stuttgart, Stuttgart, Germany; E-mail: carneirolop45@gmail.farunhofer.de

Received: 06-Dec-2022, Manuscript No. IJOAT-22-20648; **Editor assigned:** 08-Dec-2022, PreQC No. IJOAT-22-20648 (PQ); **Reviewed:** 22-Dec-2023, QC No. IJOAT-22-20648; **Revised:** 20-Feb-2023, Manuscript No. IJOAT-22-20648 (R); **Published:** 27-Feb-2023, DOI: 10.35248/0976-4860.23.14.232

Citation: Lopes C (2023) Short Note on Virtual Reality Techniques in Robotic Technology. Int J Adv Technol. 14:232.

manipulated mechanical machinery, or far flung managed semi-automatic or automatic devices, to extra realistic and clever self-sustaining robots". Examples of constant and cellular robots encompass robot fingers to construct partitions the use of diverse substances and techniques, as within side the ETHZ informed wall venture and the automatically constructed wall from NYU Abu Dhabi, and using cars to mark or screw, as in tasks advanced *via* way of means of the university of Michigan, the Hong Kong polytechnic university and the Takenaka corporation. In the latter cases, robotics counting on imaginative and prescient and sensors are programmed to carry out plot markings, nailing and screwing. Two major technologies were substantially examined and explored in structure, specifically the robot arm and the drone, every demonstrating terrific flexibility and benefits for the development enterprise and for exploring superior structure design.

With constant advances in technology, drones are expected to replace some of the manual work in the future, working side by side with humans on construction sites. It has both advantages and dangers. This research aims to analyze the future possibilities of building robots. The topic of this paper is the use of drones in construction, in particular the possibility of assembling building parts autonomously. It focuses on the robot building process using VR, specifically the role of computer simulation of human-robot interaction. We first develop a methodology for the simulation process and then present an analysis of the construction process simulation. The process is designed to identify and prevent construction errors while increasing efficiency in the construction of complex architectural styles.