It is necessary to distinguish auxiliary rooms premises and utility rooms of residential building.

Auxiliary rooms in residential buildings are rooms for the provision and maintenance of the house, and for consumer services for the population at the place of residence (lobby, staircase, transition gateway, inter-apartment corridor, wheelchair, basements, attics, etc.);

2) apartments are parts of residential buildings for single persons or for one or more families with comfortable living rooms, utility rooms, a separate exit to the staircase, gallery, corridor or street;

3) part of an apartment (single-family house) is a living room in an apartment (single-apartment house), which is suitable for permanent residence of a single person or family, and utility rooms of an apartment (one-room house) [1,3].

Utility rooms are kitchen, bathroom or shower room, toilet, apartment corridor or hallway, storage rooms or closets built into the apartment. They cannot be the subject of a separate lease agreement.

The above mentioned information provides a classification of the housing stock of Ukraine in accordance with the current legislation in the field of real estate. Each category of the housing stock category is given a concise definition.

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A RISE OF CONSTRUCTION EFFICACY BASED ON SMART APPROACH TO ACTIVITY ANALYSIS OF WORKERS

It is common knowledge that workers activity on the building site is very important because directly influences general efficacy of any construction. Irrational workers' behavior and time spending can lead to low production, discrepancies in project's schedule, constructional defects, extra expenses etc. That is exactly the point why workers' activity monitoring is so important for managers who can estimate labor efficacy better and construction progress with it. However, activity analysis of workers is mostly carried out by using method of manual observation nowadays, which is time-consuming, labor-intensive and expensive. And the reliability of such observation is under the question. The researchers have developed various automatic technologies to monitor construction sites basing on mentioned issues. They have come to nonvisual and visual methods of workers' activity analysis. [1]

Nonvisual methods are based on electronic sensors that continuously collect workers' speed, acceleration, direction etc. to classify the activities by using the global positioning system (GPS), inertial measurement unit (IMU) system, radio-frequency identification (RFID) system, and ultrawideband (UWB) system. [2-4] One of key advantages of this methods is that we can very simply identify each construction worker and his activity during working day. However we need him to wear these sensors what may cause negative reaction beside affect conventional working process.

When it comes to visual methods these systems can analyze construction progress onsite by using computer algorithms which can process camera data (pictures and videos), extract the contour map of the humans and obtain key point data about the workers' activity. (Fig. 1.)

The general scheme how it works is shown on a framework below.

Pose estimation network is used to obtain human key point information from the video. Then the multiperson tracking algorithm is adopted and the boundary frame of workers is extracted by using the key points to complete the extraction of motion and appearance information, thus effectively tracking workers and key points. Eventually multilayer fully connected neural networks and stacked long short-term memory are designed to classify the key point information of each worker, complete action recognition, and analyze the construction efficiency. [1]

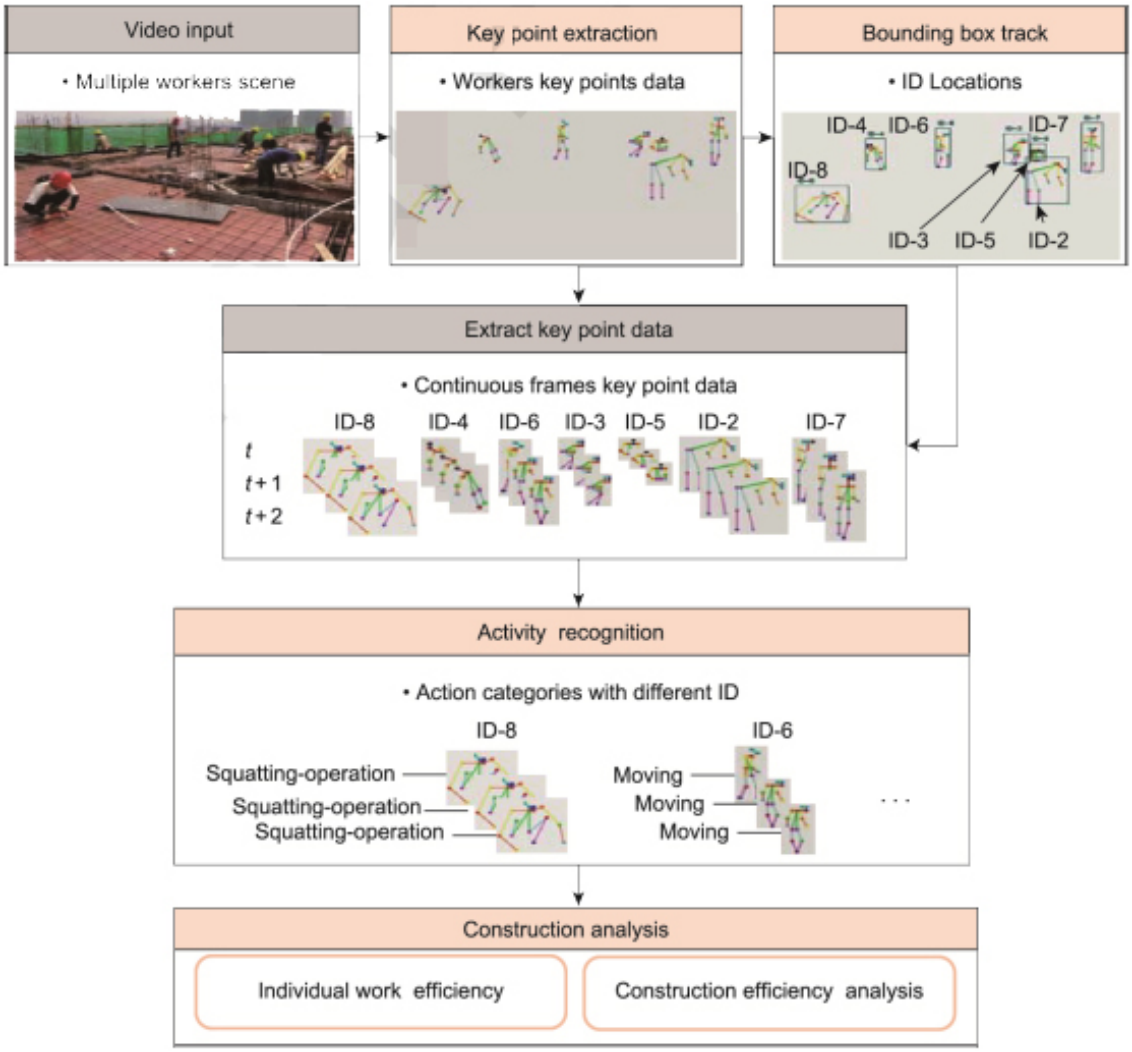

Figure 1. The framework of multiple worker construction actions and working efficiency recognition.

Developed systems of control and monitoring of worker's activity analysis mentioned above are not perfect in comparison with chronometry. However they are very perspective and may bring significant economic effect. Such a smart approach to onsite construction process control allows to monitor workers' activitywithout psychological discomfort insuring quality and motivation of the working process.

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APPLICATION OF INNOVATIVE CONSTRUCTION TECHNOLOGIES IN THE RESTORATION AND RECONSTRUCTION OF HISTORICAL BUILDINGS

In the restoration and reconstruction of historical buildings, the application of innovative construction technologies plays a crucial role in preserving the nation's history and ensuring the efficient preservation of these valuable structures.

The integration of innovative technologies such as HBIM (Historic Building Information Modeling), IOT (Internet of Things), and digital technologies is essential for achieving resilience and sustainability in the preservation process [1]. The main purpose of restoration projects is to carry cultural heritage monuments into the future with minimum changes to their structures and characteristics. This presents a significant challenge, as these unique buildings require innovative construction ideas for restoration that minimize alterations to their original form and characteristics [2].

In the practical techniques for restoration of architectural formation elements, various methods such as architectural simulation, reconstruction, disassembly & reassembly, reinforcement, and cleaning are utilized, demonstrating the significant role of new technology in restoring old buildings [3].

The application of digital technologies for the restoration of historic buildings has been emphasized, with the aim of optimizing the restoration process and identifying new possible applications of such techniques. This includes the use of 3D stereoscopic technology and virtual reality for the digital restoration of ancient buildings, providing viewers with an immersive experience of roaming through the disappearance of ancient buildings and experiencing their construction style, history, and culture [4].

Furthermore, the application of BIM (Building Information Modeling) technology has been highlighted for its significance in promoting information integration and collaboration in historical reconstruction, emphasizing the importance of information technology for modeling, design, and archive in historical restoration projects [5].

In conclusion, the application of innovative construction technologies such as HBIM, IOT, digital technologies, 3D stereoscopic technology, virtual reality, and BIM plays a crucial role in the restoration and reconstruction of historical buildings, ensuring the preservation of the nation's history and cultural heritage while embracing resilience, sustainability, and efficient preservation processes.