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ملخص البحث رقم (٥)

السيد الأستاذ الدكتور/ مقرر اللجنة العلمية الدائمة لترقية الأساتذة والأساتذة المساعدين للحاسبات والمعلومات

تحية طيبة وبعد – احيط سيادتكم علما بان البحث رقم ٥ بياناتة كالتالي:

عنوان البــــــحث باللغة الانجليزية:

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An occupancy-based strategy employing computer vision for reducing cooling energy consumed in buildings

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مكان النشر و تاريخه:

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Bulletin of Electrical Engineering and Informatics, ISSN: 2089-3191, Vol. 10, No. 3, pp. 1729-1738, June 2021.

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ا ,سماء المشاركين في البحث:

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Rania Atef Mohamed AlQadi, Alaa Zaghloul, **Shereen A. Taie**

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ملخص البــــــحث باللغة الانجليزية :

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The energy expended to cool the occupied areas by air conditioners represents a substantial share of the total energy exhausted in buildings. Therefore, developing strategies to reduce this energy is crucial. One of the preponderance strategies adopted to depreciate energy consumption in buildings is the occupancy-based strategy. In this research, an innovative model was established to achieve the goal of reducing cooling energy consumed in buildings based on occupancy-based combined with a constant temperature setpoint strategy in two phases, and each phase engrosses in 20 days. Phase one is to identify the extent of cooling energy employed according to the use of room occupants and its costs in consumption was 276.01 kWh after completion of this phase. Sequentially, constructing phase two intended to reduce cooling energy consumption by employing an automatic air-conditioner (AC) control strategy relying on an improved human detection algorithm with a $25\ ^0C$ as temperature setpoint, resulting in 112.45 kWh of consumption. To complement the motives for elaboration, the human detection measurement using you only look once (YOLO) improved by applying pre-processing algorithms to reach an average human detection enhancement of 21.2 %. The proposed model results showed that potential savings associated with the embraced strategy decreases by more than anticipated as the amount of reduced energy reached 59 % savings.