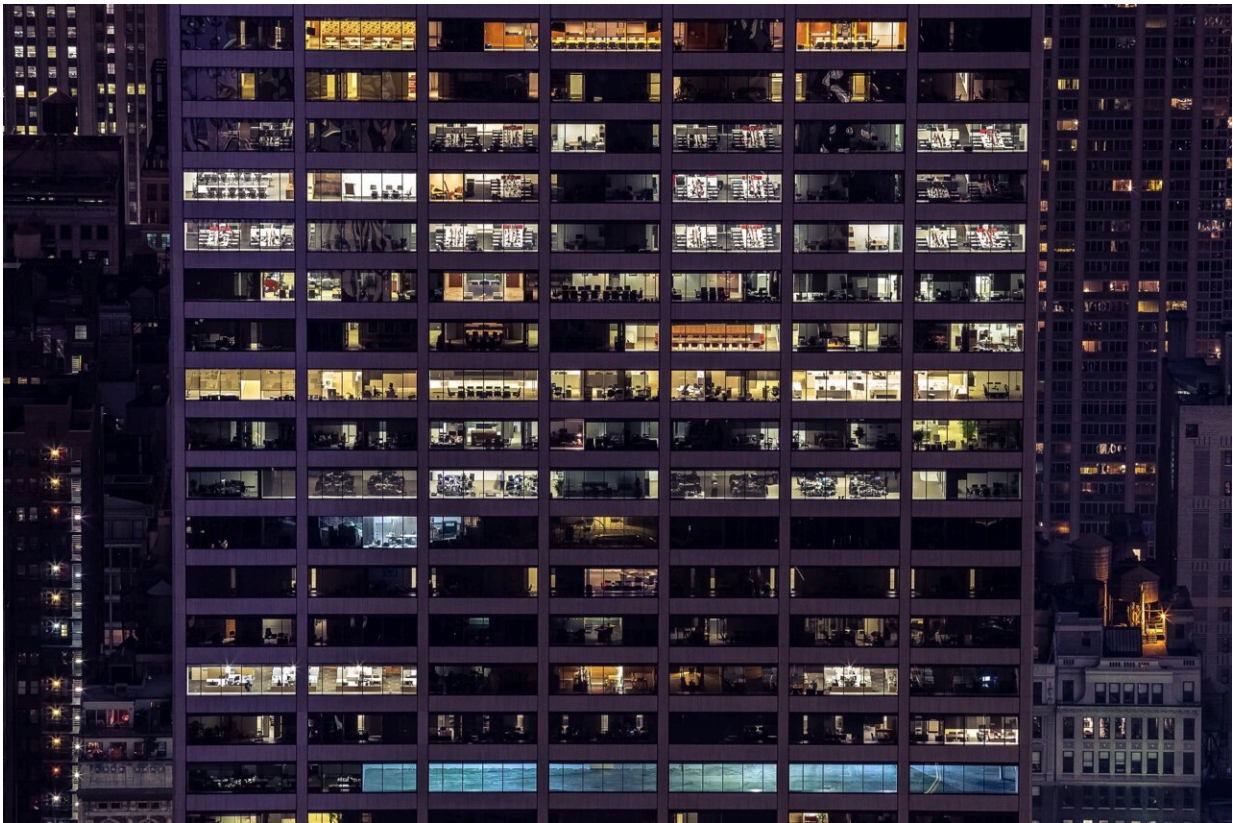


# Intelligent system for indoor illumination adjustment based on deep learning

February 8 2023, by David Bradley

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A new deep learning–based intelligent regulation system for indoor lighting intensity is described in the *International Journal of Industrial and Systems Engineering*. The novel system improves the accuracy and

efficiency of conventional lighting-regulation systems by exploiting artificial intelligence, or deep learning, trained with on sensor output and historical data. The approach allows natural light levels to be taken into account and calculates the requisite power needed to maintain consistent brightness indoors with a high adjustment accuracy of between 95.0% and 98.5%.

Chen Qun Wu of the College of Art and Design at the Yellow River Conservancy Technical Institute in Kaifeng, China, explains that intelligent, or smart, [lighting systems](#) could, in the ongoing energy and climate crises, improve efficiency, reduce costs, and lower emissions. Standard lighting systems waste a lot of resources and there is an urgent need to usurp them with an approach to lighting that takes into account various factors rather than always-on lighting at full power to illuminate a space regardless of use or [ambient light](#).

Indeed, lighting currently accounts for about one-third of the power used by a building, [intelligent systems](#) could lower that considerably. Wu adds that there is the potential not only for saving power but also for improving working conditions in offices and other buildings where conventional lighting systems can often be too bright for comfortable working.

Wu's approach takes into account lighting requirements, the movement of the sun, and other factors. It builds on a feedforward neural network structure that controls the lighting far more effectively than a simple on-off switch.

He adds that in subsequent research, he hopes to make improvements in the multi-sensor data fusion method, enhance still further the accuracy of the adjustment results, and integrate the wireless positioning functionality into the system to allow fixed-point adjustment of indoor illumination.

**More information:** ChenQun Wu, Design of intelligent system for indoor illumination adjustment based on deep learning, *International Journal of Industrial and Systems Engineering* (2022). [DOI: 10.1504/IJISE.2021.10051759](https://doi.org/10.1504/IJISE.2021.10051759)

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