Skin-Temperature Driven Thermal Sensation Prediction Model for Control of Indoor Environments

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Technology description

Market Opportunity

Large office building air conditioning and heating systems are set to comfort ranges defined by industry standards. These outdated thermal sensation models fail to consider an individual’s physiological characteristics and ignore diverse physical conditions, often causing occupants to be “too hot” or “too cold.” In the U.S., thermal dissatisfaction of building occupants is higher than 60%. This also results in office buildings wasting energy and money on over-cooling and over-heating the building. There is a need for an improved air conditioning adjustment system for large office buildings.

USC Solution

USC researchers have developed a data-driven thermal sensation prediction model that takes into consideration varying comfort ranges. This model is based on various factors including occupant skin temperature measurements and their changing rates and has shown 94.4% accuracy in thermal sensation estimation.

Application area

Indoor thermal control
Smart building

Advantages

Saves building costs for air conditioning and heating
Minimizes thermal comfort complaints
Thermal sensation estimation is 94.4% accurate

Institution

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