Business Standard

New system creates personalised climates around individuals

Press Trust of India | Washington June 12, 2014 Last Updated at 14:20 IST

MIT researchers have developed a system that creates personalised climates around individuals, providing an alternative to heating entire buildings.

The project, called 'Local Warming', uses WiFi-based motion tracking and ceiling-mounted dynamic heating elements to target a single person and create a precise personal climate around occupants of a building.

As a result, each person is kept comfortable while the space around them is maintained at a lower temperature - saving energy, researchers said.

"Today, a huge amount of energy is wasted on heating empty offices, homes, and partially occupied buildings," said Professor Carlo Ratti, director of the Massachusetts Institute of Technology (MIT) Senseable City Lab, which led the project.

"The technologies underlying Local Warming could address this by synchronising climate control with human presence, vastly improving the energy efficiency of buildings," Ratti said.

As a visitor enters a room, the person's location and trajectory are spotted using a new WiFi-based location tracking technology developed by Professor Dina Katabi and her team in the MIT Center for Wireless Networks and Mobile Computing, housed in MIT's Computer Science and Artificial Intelligence Laboratory.

This information is then transmitted in real time to an array of dynamic heating elements positioned in a grid near the ceiling.

Each element is composed of a servo-motor that changes direction, a bulb to generate infrared radiation, a cold mirror and other optics to create focused beams.

"Infrared heat is emitted to generate what are essentially spotlights of warmth centered on people a few metres away. This ensures ultimate comfort, while improving the overall energy efficiency," said Leigh Christie, the project engineer.

Miriam Roure, the lead researcher on the project and a research fellow in the Senseable City Lab, noted that the first commercial application of this technology might be responsive outdoor heaters that warm people as they move through exterior or semi-covered spaces.

Local Warming systems could then be installed in large lobbies or industrial lofts - spaces that are often sparsely occupied.

As the technology further develops, it could allow each person to define the specific temperature they prefer via smartphone, researchers said.