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*I cover entrepreneurs striving to sustain and improve the planet.*

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# The Future of Heating Buildings? MIT Introduces Local Warming

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Saving energy and our climate future often seems to come with sacrifice, but what if a new technology could eliminate some of the wasted energy on heating or cooling in buildings? Forget about monitoring your thermostat with Nest and following Jimmy Carter's advice to put on a sweater; try a new ceiling-mounted heating system that uses motion tracking to create personal climates.

Developed by researchers at the [MIT Senseable City Lab](#), the system targets and tracks people in a building and then synchronizes climate control with those occupants. The WiFi-based motion tracking system, previously developed at the MIT Center for Wireless Networks and Mobile Computing, works in real time, instantaneously sending data to the heat-radiating bulbs. The ceiling-mounted system is composed of panels with infrared heat lamps. These infrared bulbs project heat directly onto the occupants, with the aid of mirrors and rotating motors, rather than a building having to use an internal piping system to heat the entire space. Therefore, the space the person occupies is heated while the surrounding area is left at room temperature.



*Local Warming is currently on display as an installation at the 14th Venice Architecture Biennale. (Photo credit: Aaron Nevin)*

The innovation, dubbed “Local Warming,” first came to mind when Carlo Ratti, director of the MIT Senseable City Lab, considered how much energy is wasted on heating lobbies and open areas when they are only sparsely occupied. Ratti and his team chose to first study the discrepancy between HVAC systems and occupancy levels in buildings within MIT’s campus and [published the results](#). That academic study became the basis for launching their product.

The system debuted last week at the 14th Venice Architecture Biennale, a biannual architectural festival and will continue to be displayed until November. The research team designed the installation as a working prototype. It has an array of ceiling panels with oversized, infrared bulbs, which Ratti described as highlighting the concept rather than the practical use. Ratti said that the system could contain much smaller LEDs and be added to existing ceilings instead of requiring much more additional infrastructure. The lights in the installation rotate when tracking occupants, but that feature could be eliminated by using a smaller LED bulbs instead.

Now, the research team is considering the future of the system. The MIT Senseable City Lab has experience launching startups. In 2009, the lab developed the “Copenhagen wheel,” which can turn any bicycle into an electric hybrid. The wheel holds a battery and can also track linear acceleration and other movement dynamics. That device is now sold and further refined by startup [Superpedestrian, Inc](#), led by the associate director of MIT Senseable City Lab, Assaf Biderman. Superpedestrian, which raised \$2.1 million in venture capital, began the commercial release of the product in December 2013.

As to Local Warming, Ratti said that he is debating whether to continue the project in an academic setting or to launch another startup. The system also only emits and controls heat, so Ratti and his team are exploring ways to improve building-wide cooling — probably in a more sophisticated fashion than the standard fan.