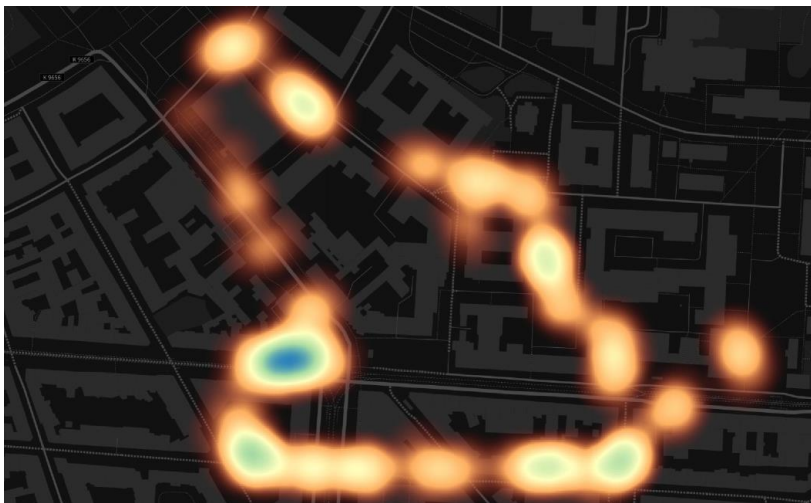


## Tracking Fear-causing Spaces in the City

Urban Emotions Project Makes Stress Perception of Pedestrians and Cyclists Measurable / Combination of Body Reaction and Position Data Provides Information on Perception of Spaces



*Relaxing or stressful: urban planners of KIT study how people experience certain places. (Photo: Urban Emotions)*

**Cyclists feel the cold sweat of fear when trucks come too close. Pedestrians feel uncomfortable in the subway, but just around the street corner they enjoy their relaxing strolls. Spatial and social structures of a city cause both individually and collectively different feelings. The Urban Emotions project of Karlsruhe Institute of Technology (KIT) develops methods to make these emotions measurable for later consideration in urban and spatial planning.**

“Under stress conditions, the skin’s conductivity increases, while the body’s temperature decreases. These reactions of the body cannot be influenced. Their measurement, hence, enables objective determination of emotions,” says Dr. Peter Zeile, head of the project carried out by the Urban Quarter Planning Group of KIT’s Institute for Urban and Landscape Design. Apart from urban planners, psychologists, sociologists, and geoinformatics experts are involved in the international project funded by the German Research Foundation (DFG) and the Austrian Science Fund. Urban Emotions provides new insights into how people experience the city emotionally depending on the design

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of traffic areas, the size and distance of buildings, and the dynamics in a park or on a frequently used bicycle path.

Using smart band sensors, scientists measure close to real time the physical stress reactions of test persons in different urban situations. At the same time, a 360-degree video camera attached to the bicycle or body records the surroundings, while the position of the test person is determined by GPS. Combination of the body's resonance data with the images and position data allows findings to be obtained as to when and where the test persons experienced stress. "We found, for example, that turning left from a lane with vehicles driving straight on means considerable stress for cyclists, and also bumpy roads make them feel upset," says urban planner Zeile.

Digital urban research under Urban Emotions helps identify and eliminate locations of fear in the city and may serve as a basis for citizen-centered spatial planning processes. "Accessibility, for instance, means something different for the visually impaired and for wheelchair users. Needs that can be measured objectively have more weight in a discussion and facilitate decision-making," says the scientist. In his opinion, the methods of Urban Emotions supplement and support established approaches to urban research. Measurement of emotions places man in the center of planning and contributes to new perspectives in urban development. "In a city, in which cyclists feel safe, more people will use the bicycle instead of a car," Zeile says. The partners of KIT in the Urban Emotions project are the University of Salzburg, Heidelberg University, the German Research Center for Artificial Intelligence Kaiserslautern, the Harvard-MIT GIS Center, and the University of São Paulo at São Carlos School of Engineering.

**Being "The Research University in the Helmholtz Association," KIT creates and imparts knowledge for the society and the environment. It is the objective to make significant contributions to the global challenges in the fields of energy, mobility and information. For this, about 9,300 employees cooperate in a broad range of disciplines in natural sciences, engineering sciences, economics, and the humanities and social sciences. KIT prepares its 25,500 students for responsible tasks in society, industry, and science by offering research-based study programs. Innovation efforts at KIT build a bridge between important scientific findings and their application for the benefit of society, economic prosperity, and the preservation of our natural basis of life.**

This press release is available on the internet at [http://www.sek.kit.edu/english/press\\_office.php](http://www.sek.kit.edu/english/press_office.php).



*Physical stress reactions are measured by the smart band sensor. At the same time, the video camera records the surroundings. (Photo: Patrick Langer, KIT)*



*Urban planner Dr. Peter Zeile. (Photo: Patrick Langer, KIT)*

The photos in the best quality available to us may be downloaded under [www.kit.edu](http://www.kit.edu) or requested by mail to [presse@kit.edu](mailto:presse@kit.edu) or phone +49 721 608-21105. The photos may be used in the context given above exclusively.