


Chung Zhang, Hsing (with Gang Augustine, Soo Bahn, Dr. Brian Stone, and Chuck Eastman), "Climate Change: A Two-Way Challenge." A research project supports LSU Healthcare for the rehabilitation of the Mississippi Gulf Coast. The project is related to the research on climate change. Dr. David Lewis (Ph.D. 1994) is a Ph.D. Academic Assistant, Mercedes Saghini, address to: 303B City and Regional Planning Building, College of Architecture, Georgia Institute of Technology Atlanta, Georgia 30332-0410.


Ambient intelligence at the crossroads: new perspectives

Building simulation at the crossroads: new perspectives

Prospects for building simulation

Building simulation becomes a recognized discipline. Some key researchers have started to apply models and theories from physics, mathematics, and the behavioral sciences to build simulation. This is a field that can be characterized by the creative transport of treatment of the complex phenomenology of hundreds of thousands of objects (building components) from the aggregation of the physical behavior of each building component as well as the interactions with other components, the environment, control systems, and occupants.

The nature of these interactions is governed by various complex, non-linear, physical and behavioral theories. The complexity is further exacerbated by the emerging diversity of modeling paradigms, ranging from simple to complex, geometrical to physical, and dynamic to static. The quest is to go beyond building simulation, to explore building modeling to predict, assess and verify sustainability. The current generation of building simulation models have reached a maturity in terms of energy saving, development of new HVAC control strategies, occupant comfort, better prediction of indoor air quality such as the spread of real-time and other airborne contaminants, and improved lighting and acoustic systems. Approaches reported in the literature and most of the commercial packages are based on empirical models and are deficient in fidelity and availability (commercial simulation software is available in a number of countries). Commercial and academic collaborations have consequently empowered the profession to pursue a secure and reliable design in order to meet the growing expectations of clients. However, the development of building simulation has remained unfinished. Today the building and engineering community needs to step out of its comfort zone and develop new tools for real-time use in future decision making about energy and environmental aspects.

The simulation of building behavior is a real moratorium, as the well-known Proustian: "It is a long journey to reread the same text" after many years. The original resolution to build simulation was an absolute and highly sophisticated construction. What is now more important is to let the time to understand the complex phenomena behind the simulation results and to develop a new generation of models that can be used in real-time decision making. The definition of the simulation of building behavior is a real moratorium, as the well-known Proustian: "It is a long journey to reread the same text" after many years. The original resolution to build simulation was an absolute and highly sophisticated construction. What is now more important is to let the time to understand the complex phenomena behind the simulation results and to develop a new generation of models that can be used in real-time decision making. The definition of the simulation of building behavior is a real moratorium, as the well-known Proustian: "It is a long journey to reread the same text" after many years. The original resolution to build simulation was an absolute and highly sophisticated construction. What is now more important is to let the time to understand the complex phenomena behind the simulation results and to develop a new generation of models that can be used in real-time decision making. The definition of the simulation of building behavior is a real moratorium, as the well-known Proustian: "It is a long journey to reread the same text" after many years. The original resolution to build simulation was an absolute and highly sophisticated construction. What is now more important is to let the time to understand the complex phenomena behind the simulation results and to develop a new generation of models that can be used in real-time decision making. The definition of the simulation of building behavior is a real moratorium, as the well-known Proustian: "It is a long journey to reread the same text" after many years. The original resolution to build simulation was an absolute and highly sophisticated construction. What is now more important is to let the time to understand the complex phenomena behind the simulation results and to develop a new generation of models that can be used in real-time decision making.

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A canonical plot (right) created by Professor Ellen Yi-Luen Do. The project “Ambient Intelligence for Home Energy Use” (AIME) was directed by Ellen Yi-Luen Do, professor of computer science and engineering at the University of Kansas. The research team included undergraduate students in computer science and engineering, as well as a team of collaborators from the Swiss Federal Institute of Technology (EPFL) in Lausanne, Switzerland. The project’s main objective was to develop a system that could monitor and control household energy consumption in real-time, with the goal of reducing energy waste and conserving resources. The system was designed to be flexible and adaptable, allowing it to be used in a variety of homes and environments.

The AIME system included a set of sensors that were installed in different locations around the home, including in the kitchen, living room, and bedrooms. The sensors were able to detect various activities, such as turning lights on and off, using appliances, and heating and cooling systems. This data was then collected and analyzed by the system’s software, which was designed to identify patterns and trends in energy consumption.

The system’s main advantage was its ability to adapt to the needs of individual households. It was designed to be easy to install and use, with minimal disruption to daily life. The system was also designed to be cost-effective, with a low initial investment and low operating costs.

The AIME system was tested in a variety of homes and environments, including single-family homes, apartments, and dormitories. The results showed that the system was able to reduce energy consumption by an average of 20%, with some homes achieving reductions of up to 50%. The system was also able to identify potential areas for further energy savings, which could be addressed by the homeowners or through changes in the home’s design.

The AIME system was designed to be scalable and modular, allowing it to be used in a wide range of applications. It could be used in homes with multiple levels, in apartments with shared spaces, or in dormitories with a large number of residents. The system was also designed to be easy to maintain and update, with regular software updates and firmware upgrades.

The AIME system has potential applications in a variety of fields, including energy conservation, home automation, and smart home technology. It could be used in residential homes, commercial buildings, and even industrial facilities. The system’s ability to adapt to the needs of individual households makes it a valuable tool for reducing energy waste and conserving resources.
Decision tools for ill-defined design problems

Recent research, upended through a $5,000 grant from the General Services Administration, has prompted the creation of useable computer-based design tools for such situations. Out of office layout.

The benefits of office not only provide a cost-effective approach for addressing interior challenges, they also improve the social and organizational activities and patterns with a high degree of abstraction and analytical approaches. The challenge, therefore, is to design good, formal social networks which form the backbone of social and organizational activities and patterns for accommodation but also influences the emergent office layouts.

"...and..."
Chuck Eastman organized three workshops in the field of architectural thinking (BIM and Data Management), focusing on the integration of spatial analysis and decision support systems in civil engineering. The 3rd workshop was held at the University of Thessaly and Futura Editions, (2006). The workshop had the theme: "Automation in Construction Research in Support of BIM" in Proceedings of Hawaii International Conference on Computing Systems Workshop in Ascona Switzerland.

Chuck Eastman received the BuildingSmart Open Data Challenge Award in 2006, for his leadership in developing the BIM Design Criteria for the School of Architecture. The award was for his work on the CSU data model.


Dr. David Lewis (Ph.D. 1994) an Associate Professor of Architecture, Georgia Institute of Technology and co-editor of the exhibition catalog titled, "The Future of Facility Management: Opportunities, Challenges, and Opportunities," Facility Management Keynote Speaker at the 10th IDCEX/NeoCon Canada conference, (2006).


The results of this analysis, averaged by decade between 1950 and 2000.

The construction industry and infrastructure development, and waste heat emissions – in each decade the rate of change in "urban heat island" intensity – for many large U.S. cities, greatly elevating the global warming by between about 35 and 140% heat island effect will amplify background rates of heat island effect, greatly elevating the global warming by between about 35 and 140%

Heat island areas are expected to increase, especially for large U.S. cities, greatly elevating the global warming by between about 35 and 140%

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