

## Guest Editorial Preface

# Special Issue of Revised and Extended Papers From the ATI 2020, 1st International Symposium on Architecture, Technology, and Innovation

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Technology has always been pivotal in shaping the society. Advances in information technologies and material sciences in the course of the twenty-first century have irreversibly altered not only the everyday life of individuals, so that the structural tenets of societies, but also the design, construction and management methods in architectural, engineering and urban practices. Beyond these alterations, recent innovations in emergent technologies such as the Internet of Things (IoT) and/or Machine Learning have started to define unprecedented needs and requirements for the built environments. Moreover, environmental problems like pollution, source limitations, overcrowded cities, climate change, extreme weather conditions and the social crises that they cause on the doorstep require each and every profession to rethink its role in the ever-changing conditions of today's dynamic political and economic agenda, make urgent decisions to adjust itself and take immediate actions. Cutting-edge technological developments and innovations have the potential of being both remedy and poison for these environmental, economic and social upheavals.

Based on these premises, the organisers of the annual symposium on architecture, technology and innovation wanted to scrutinize the role of emerging technologies in the profession of architecture, planning and urban design with an emphasis on innovative practices to address the significant challenges and imperatives of the twenty-first century. Therefore, the symposium theme "Smart Cities and Smart Buildings" conveys the vanguard perspectives for smarter, better and liveable urban environments through technology-centric thinking and doing.

This special issue of the *International Journal of Digital Innovation in the Built Environment* (IJDIBE) contains five revised and extended papers from the International Symposium on Architecture, Technology and Innovation (ATI 2020) held as an online event between 25 and 28 August 2020 by the Yaşar University Faculty of Architecture. This new symposium series brings forth the theory and practice of cutting-edge technology and provides a scholarly platform for stimulating critical debate on research into theories, approaches, principles, applications and the implementation of new and advancing technologies in architectural design, planning and construction.

The five papers in this special issue cover a range of aspects of innovative structural, sustainable design principles and perception of space. Each of these revised and extended papers have undergone full double-blind peer review, prior to being selected for this special issue.

The first paper, "Smartphones and the Perception of Space," is written by Marilia Kaisar and we think it makes a great opener for this special issue. In his paper, Marilia investigates how the

engagement with the smartphone has created a shift in perception and embodiment that affects the relationship between the moving body and the city. The results of his study explore how informational flows create new topologies, new embodied experiences, and new futures for our cities.

In “The Impacts of Early Architectural Design Decisions on Building Performance,” Orçun Koral İşeri and Onur Dursun demonstrate the energy simulations for hypothetical office building based on TS-825 requirements with cooling and heating demand and reveal the outputs for two different regions, i.e., Erzurum as a cold climate and Izmir as a hot-humid climate.

The retrofit processes for buildings are the topic under discussion by Şahin Akın, Orcun Koral İseri, Ipek Gürsel Dino and Bilge Erdoğan. In their paper “Exploratory and Multi-Objective Decision-Making Methods for Retrofit Planning Processes,” they discuss different user preference-based decision-making approaches for building retrofit that involves the collaborative evaluation of multiple design parameters and objectives simultaneously.

Yusuf Buyruk, Sehnaz Cenani, and Gülen Çağdaş proposes an agent-based exchange model for the university students in order reduce commute times in their paper “An Agent-Based Home Exchange Model to Reduce Commute Times of University Students.” In this study, a problem specific matching algorithm has been designed and also, two main one-sided matching algorithms have been implemented for home exchange problem and the algorithms have been applied on a virtual data.

In “Mobility Analysis of Reciprocal Frames,” Gülçin Özen and Koray Korkmaz present the geometric and kinematic analyses of the spatial kinetic reciprocal frame structures. In this context, zero, single and multi-DoF configurations are examined and their formal flexibilities are presented.

As the organisation committee of the ATI 2020, 1st International Symposium on Architecture, Technology and Innovation, we hope that reading these high-quality papers will inspire you to make your own submissions to future ATI symposiums.

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