

## ***“Mass Customization: models and algorithms”***

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12:30 - 2:00pm

Room 3-133

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#### *Abstract*

The modernistic approach to the design of a large number of objects, such as a housing estate, was to design a limited number of types and then to repeat it based on market analysis. This approach led to uniform housing and rigid urban plans. Contemporary processes may overcome such limitations by using rule-based computer-aided design and manufacturing processes. The goal is to give mass-produced houses some of the qualities associated with individually designed ones and to endow planned environments with the qualities associated with traditional settlements.

The lecture will first focus on research carried out to develop a rule-based framework for customizing mass housing and then explain how such a framework might be reconfigured to enable flexible urban design. Several case studies will be presented, including grammars for existing planned and non-planned designs, such as the one for Siza's Malagueira houses and the one for the Marrakech Medina, as well as grammars for original designs.

#### *Bio:*

José Pinto Duarte (Licenciatura '87, FAUTL; S.M.Arch.S '93 and Ph.D. '01, MIT) is Associate Professor at the Technical University of Lisbon Faculty of Architecture (FA-TU Lisbon) and researcher at Instituto Superior Técnico (IST-TU Lisbon), where he founded the ISTAR Labs - IST Architecture Research Laboratories. In 2001-2003 he was Research Associate at MIT, working on the Changing Places project (former House\_n) and this semester he is a Visiting Scientist at the MIT Design Lab.

His main research interests are mass customization with a special focus on housing, and the application of new technologies to architecture and urban design in general. The goal is to use computer aided design and fabrication technologies to provide for mass customized products. He has authored several conference papers and journal articles on these topics. He also is the author of “Type and Module” (LNEC, 1995) and co-editor of “The Lisbon Charrette” (with J. Bento and W.J. Mitchell, IST Press 1999) and “Collaborative Design and Learning” (with J. Bento, M. Heitore W. J. Mitchell, Praeger 2004).

He was invited speaker at Unicamp, Brazil; KAIST, South Korea; Myiagi University, Japan; Carnegie-Mellon University and Harvard University, U.S.A; and at the firm Ove Arup in London. Articles on his work appeared on large circulation magazines such as A+U Japan, Popular Science, U.S.A., and New Scientist, United Kingdom.

He was awarded the Santander/TU Lisbon Prize for Outstanding Research in Architecture by the TU Lisbon in 2008.