João Manuel R. S. Tavares

Short Biography: João Manuel R. S. Tavares graduated in Mechanical Engineering at the Universidade do Porto, Portugal in 1992. He also earned his M.Sc. degree and Ph.D. degree in Electrical and Computer Engineering from the Universidade do Porto in 1995 and 2001, and attained his Habilitation in Mechanical Engineering in 2015. He is a senior researcher at the Instituto de Ciência e Inovação em Engenharia Mecânica e Engenharia Industrial (INEGI) and Full Professor at the Department of Mechanical Engineering (DEMec) of the Faculdade de Engenharia da Universidade do Porto (FEUP).

João Tavares is co-editor of more than 60 books, co-author of more than 50 book chapters, 650 articles in international and national journals and conferences, and 3 international and 3 national patents. He has been a committee member of several international and national journals and conferences, is co-founder and co-editor of the book series "Lecture Notes in Computational Vision and Biomechanics" published by Springer, founder and Editor-in-Chief of the journal "Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization" published by Taylor & Francis, Editor-in-Chief of the journal "Computer Methods in Biomechanics and Biomedical Engineering" published by Taylor & Francis, and co-founder and co-chair of the international conference series: CompIMAGE, ECCOMAS VipIMAGE, ICCEBS and BioDental. Additionally, he has been (co-)supervisor of several MSc and PhD thesis and supervisor of several post-doc projects, and has participated in many scientific projects both as researcher and as scientific coordinator.

His main research areas include computational vision, medical imaging, computational mechanics, scientific visualization, human-computer interaction and new product development.

(More information can be found at: www.fe.up.pt/~tavares)

Presentation Title:

Biomedical Imaging Segmentation: from thresholding to deep learning based methods

Abstract:

The segmentation of biomedical images by computational methods is very challenging, and it is mostly undertaken using thresholding, deformable models built on statistical, geometrical or physical principles, and/or machine learning based approaches. Examples of current applications of segmentation methods include the identification of skin lesions, lungs, heart, prostate, liver, blood vessels, brain, ear, and related structures, just to name a few. In this lecture, algorithms that we have developed to segment images acquired using different biomedical imaging modalities will be described and their use in different applications discussed.