**Using the complementarity of Semantic Knowledge and Machine Learning for solving Computer Vision Issues**

**Prof. Jean Sequeira, CEO of the 2IK Company**



**Biography**

Prof. Jean Sequeira has been the CEO of 2IK (Image, Information & Knowledge) company since 2017 and an “Invited Professor” since 2008 at the IRSA (Institute for Remote Sensing Applications – institute of the Chinese Academy of Sciences). Formerly, he had been a research project leader at the IBM France company (1981-1991) and a Full Professor at the Aix-Marseille Université from 1991 to 2021 (Exceptional Class Professor since 2010). He used to work in foreign countries (two years in Ivory Coast and six months in United States) or in collaboration with various countries as China, Algeria, Peru, India, Burkina Faso, Canada. He also developed research partnerships with several industrial companies. In 2006, he participated to the creation of an international organization, ISDE (International Society for Digital Earth) and he had been a member of its Executive Committee for ten years (2006-2016). He is the author of about 135 papers and he supervised about 30 PhD students.

During the last 45 years, Prof. Jean Sequeira has been developing research and projects (with institutes and industrials) in the field of “Image and Computer Science”, i.e. “Image Analysis”, “Geometrical Modeling”, “Visualization and Immersive Interaction”, ”Pattern Recognition”, “Artificial Intelligence”, for applications dedicated to “Medical Imaging”, “Remote Sensing”, “Forensics”, “Industrial Computer Vision”, “Video Watching” and “Sport Supervision”. Since he retired from his position of Professor at the University in 2021, Jean Sequeira has been developing a Research and Development activity on behalf of the 2IK company, through several partnerships with industrials and academics.

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**Abstract**

Two main approaches have been developed in the field of Artificial Intelligence. One is based on the use of semantic knowledge and the other one on machine learning. Recent advances in Data Science and Neural Convolutional Networks have put machine learning on the stage, especially with the development of Deep Learning and the access to huge Data Bases. In some cases, data sets are not big enough or cannot cover all the situations. On the other hand, sometimes, we clearly capture the scheme that makes us understand how to solve a specific case. For all these reasons, we can take advantage of using the complementarity of both semantic knowledge and machine learning for efficientely take over such cases.

In this presentation, we will discuss this question and we will illustrate this discussion with a few practical issues related to Computer Vision. One concerns the detection and tracking of helipads (platforms for helicopter landing). Another one concerns the segmentation of color images.