

Topic: **Time of Flight 3D Sensing and Imaging: detectors, readout circuits and data processing**

Presenter: **David Stoppa**
ams AG, Rüşchlikon, Switzerland

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Abstract:

In the past few years we have assisted to a tremendous increase of the number of applications requiring highly sophisticated electronic systems capable of taking autonomous decisions during the interaction with complex environments and scenarios. Depth sensors represent a fundamental enabling technology for such applications, allowing to reconstruct a complete 3D model of the surrounding environment, thus increasing the reliability and robustness of automatic objects classification. Several depth-sensing technologies are available, and it is becoming more and more evident that the optimal solution relies on a clever combination and optimization of multiple techniques, through a careful optimization at system level of a multitude of parameters. The main goal of this talk is to provide an in-depth overview of state-of-the-art ToF detectors technologies focusing on the main advantages and disadvantages of the two key competing detector classes, i.e. photo-demodulators or SPADs, and their natural implementation in indirect-/direct-ToF systems through key examples from commercial and academic implementations.

Bio:

David Stoppa (SM'12-M'97) received the Laurea degree in Electronics Engineering from Politecnico of Milan, Italy, in 1998, and the Ph.D. degree in Microelectronics from the University of Trento, Italy, in 2002. In 2017 he joined AMS where he is in charge of the research and development of next generation range-sensors. From 2014 to 2017 he has been the head of the Integrated Radiation and Image Sensors research unit at FBK where he has been working as a research scientist since 2002 and as group leader of the Smart Optical Sensors and Interfaces group from 2010 to 2013. From 2002 to 2012 he has been teaching at the Telecommunications Engineering faculty of the University of Trento, courses of Analogue Electronics and Microelectronics. His research interests are mainly in the field of CMOS integrated circuits design, image sensors and biosensors. He has authored or co-authored more than 120 papers in international journals and presentations at international conferences, and holds several patents in the field of image sensors. Since 2011 he served as program committee member of the 'International Solid-State Circuits Conference' (ISSCC) and the SPIE 'Videometrics, Range Imaging and Applications' conference, and was technical committee member of 'International Image Sensors Workshop' (IISW) in 2009, 2013, 2015 and 2017. He was a Guest Editor for IEEE Journal of Solid-State Circuits special issues on ISSCC'14 in 2015 and he is serving as Associate Editor since 2017. Dr. Stoppa received the 2006 European Solid-State Circuits Conference Best Paper Award.

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Organisation and contact: Bernd Deutschmann (bernd.deutschmann@tugraz.at) and
Gernot Hueber (g.hueber@ieee.org)

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