

IEEE Open Journal of the Solid-State Circuits Society

CALL FOR PAPERS

Special issue on

Imagers for 3D vision

Depth perception has been and continues to be one of the fastest growing fields of research and development both in academia and industry. There is an abundance of applications requiring 3D vision, from automotive safety and self-driving vehicles to virtual/augmented reality (VR/AR), from high-end imaging to proximity sensing. With the explosion of automated package handling, semi-robotic delivery, and advanced driver-assistance systems (ADAS), the need to safely and accurately reconstruct the environment in 3D is also exploding, along with more demanding requirements for 3D vision cameras in terms of resolution, precision, and speed.

To realize cameras and, more generally, imagers optimized for 3D vision, academic and industrial labs have generated a flurry of designs, often with the help of and in collaboration with CMOS image sensor technologists, who have created new solutions to more effectively address 3D vision problems. An obvious example is the creation of 3D stacking that has allowed packing more and more advanced functionalities in a single chip for the capture and interpretation of 2D/3D images. These technological advances would not have been possible without the economies of scale that have continued pushing for a smaller feature size in integrated circuits. Another clear push for deep learning and artificial intelligence, applied to 3D vision, is apparent now. This is requiring significant hardware-based accelerators that are often integrated on the imager chip. In this special issue we want to explore imagers for 3D vision, their applications, and the technologies that have made all these advances possible.

Authors are invited to submit papers following the IEEE Open Journal of the Solid-State Circuits Society (OJ-SSCS) guidelines, within the remit of this Special Issue call.

Topics include novel advances for imagers for 3D vision such as (but not limited to):

- Novel principles and architectures for 3D vision
- Flash and scanned LiDAR
- High-speed hardware for 3D vision
- Embedded deep-learning engines for 3D vision
- Advanced pixels for imaging in 3D
- SPAD imagers
- MEMS for fast and reliable 3D vision
- 3D-stacking technologies supporting advanced imaging functionalities
- The readout bottleneck and localized processing/compression

Submission Guidelines: All submitted manuscripts must

- (i) conform to OJ-SSCS' normal formatting requirements and page count limits;
- (ii) incorporate no less than 70% of new (previously unpublished) material;
- (iii) validate principal claims with experimental results;
- (iv) be submitted online at: <https://mc.manuscriptcentral.com/oj-sscs> Please note that you need to select "Imagers for 3D vision", when you submit a paper to this Special Issue.

Deadlines

Call open for Submissions: April 1, 2021
Paper Submission: June 30, 2021
Completion of First Review: August 15, 2021
Completion of revised manuscript: September 15, 2021
Completion of Final Review: October 15, 2021
Target Publication: November 2021

Guest Editor

Prof. Edoardo Charbon
EPFL edoardo.charbon@epfl.ch