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Adaptive Attention: Bringing Active Vision into the Camera

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Abstract
Most cameras today capture images without considering scene content. In contrast, animal eyes have fast mechanical movements that control how the scene is imaged in detail by the fovea, where visual acuity is highest. The prevalence of active vision during biological imaging, and the wide variety of it, makes it very clear that this is an effective visual design strategy. In this talk, I cover our recent work on creating *both* new camera designs and novel vision algorithms to enable adaptive and selective active vision and imaging inside cameras and sensors.

Bio
Sanjeev Koppal is an Associate Professor at the University of Florida's Electrical and Computer Engineering Department. He also holds a UF Term Professor Award for 2021-24. Sanjeev is the Director of the FOCUS Lab at UF. Prior to joining UF, he was a researcher at the Texas Instruments Imaging R&D lab. Sanjeev obtained his Masters and Ph.D. degrees from the Robotics Institute at Carnegie Mellon University. After CMU, he was a postdoctoral research associate in the School of Engineering and Applied Sciences at Harvard University. He received his B.S. degree from the University of Southern California in 2003 as a Trustee Scholar. He is a co-author on best student paper awards for ECCV 2016 and NEMS 2018, and work from his FOCUS lab was a CVPR 2019 best-paper finalist. Sanjeev won an NSF CAREER award in 2020 and is an IEEE Senior Member. His interests span computer vision, computational photography and optics, novel cameras and sensors, 3D reconstruction, physics-based vision, and active illumination.

Host
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