

SenSIP Seminar Series

Towards Privacy Preserving Cameras

Presenter: Sanjeev Koppal

Assistant Professor in ECE, University of Florida

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Abstract

The next wave of mobile/IoT devices will create a world with trillions of small networked cameras. This will lead to increased concerns about privacy and security. Most privacy preserving algorithms for computer vision are applied after image/video data has been captured. We propose to use privacy preserving optics that filter or block sensitive information directly from the incident light-field before sensor measurements are made, adding a new layer of privacy. In addition to balancing the privacy and utility of the captured data, we address trade-offs unique to miniature vision sensors, such as achieving high-quality field-of-view and resolution within the constraints of mass and volume. Our privacy preserving cameras enable applications such as depth sensing, full-body motion tracking, people counting, blob detection and privacy preserving face recognition. While we demonstrate applications on macroscale devices (smartphones, webcams, etc.) our theory has impact for smaller devices.

Biography:



Sanjeev J. Koppal is an assistant professor at the University of Florida's ECE department. 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, where his adviser was Prof. Srinivasa Narasimhan. After CMU, he was a post-doctoral research associate in the School of Engineering and Applied Sciences at Harvard University, with Prof. Todd Zickler. He received his B.S. degree from the University of Southern California in 2003. His interests span computer vision, computational photography and optics and include novel cameras and sensors, 3D reconstruction, physics-based vision and active illumination.

Refreshments

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