13th IEEE Workshop on Perception Beyond the Visual Spectrum

PBVS 2017

In Conjunction with

CVPR 2017

Honolulu, Hawaii, USA - July 21, 2017

BAE SYSTEMS

CALL FOR PAPERS

The objective of this workshop is to highlight cutting edge advances and state-of-the-art work being made in the exponentially growing field of PBVS (previously OTCBVS) along its three main axes: Algorithms, Sensors Processing, and Applications. This field involves deep theoretical research in sub-areas of image processing, machine vision, pattern recognition, machine learning, robotics, and augmented reality within and beyond the visible spectrum. It also presents a suitable framework for building solid advanced vision based systems.

The computer vision community has typically focused mostly on the development of vision algorithms for object detection, tracking, and classification associated with visible range sensors in day and office-like environments. In the last decade, infrared (IR), depth, IMU, thermal and other non-visible imaging sensors were used only in special areas like medicine and defense. That relatively lower interest level in those sensory in computer vision was due in part to their high cost, low resolutions, poor image quality, lack of widely available data sets, and/or lack of consideration of the potential advantages of the non-visible part of the spectrum. These historical objections are becoming less relevant as sensory technology is advancing rapidly and the sensor cost is dropping dramatically. Image sensing devices with high dynamic range and high IR sensitivity have started to appear in a growing number of applications ranging from defense and automotive domains to home and office security. In addition, mobile hyperspectral and mm-wave sensors are also coming into existence.

In order to develop robust and accurate vision-based systems that operate in and beyond the visible spectrum, not only existing methods and algorithms originally developed for the visible range should be improved and adapted, but also entirely new algorithms that consider the potential advantages of non-visible ranges are certainly required. The fusion of visible and non-visible ranges, like radar and IR images, depth images or IMU information, or thermal and visible spectrum images as well as acoustic images, is another dimension to explore for higher performance of vision-based systems. The non-visible light is widely employed in night vision-based systems, and many detection and recognition systems available today in the market are relying on physiological phenomena produced by IR and thermal wavelengths. Using artificially controlled lights is a practical solution to eliminate challenging ambient light effects.

This 13th IEEE CVPR WS on Perception Beyond the Visible Spectrum (PBVS'2017) creates connections between communities in the machine vision world ranging from public research institutes to private, defense, and federal laboratories. It brings together academic pioneers, industrial and defense researchers and engineers in the field of computer vision, image analysis, pattern recognition, machine learning, signal processing, sensors, and human-computer interaction.

Organization

Organizer and Program Chair:
Dr. Riad I. Hammoud
BAE Systems, USA
Program Co-Chairs:
Prof Haibin Ling
Temple University, USA
Prof Maryam Rahnemoonfar
Texas A&M University, USA
Publication Chair:
Dr. Yi Ding
3M, USA
Advisory Committee:
Prof Guoliang Fan
Oklahoma State University, USA
Dr. Erik Blasch
Air Force Research Lab, USA
Dr. Firooz Sadjadi
Lockheed Martin Corp, USA
Dr. Behzad Kamgar-Parsi
Office of Naval Research, USA
Keynote Speakers:
Dr. Kevin Priddy
Air Force DCGS, USA
Prof. Jingyi Yu
University of Delaware
TBD
NVIDIA

Important Dates

- Paper Submission: **March 31, 2017**
- Author Notification: **May 01, 2017**
- Camera Ready: **June 4, 2017**
- PBVS Workshop: **July 21, 2017**

Topics of Interests

Sensing/Imaging Technologies

- *IR/EO imaging system*
- *Underwater sensing*
- *Hyperspectral/Satellite imaging*
- *Spectroscopy/Microscopy imaging*
- *LIDAR/LDV sensing*
- *Compressive sensing*
- *RADAR/SAR imaging*
- *RGBD sensing*

Applications & Systems

- *Surveillance and reconnaissance systems*
- *Autonomous vehicles*
- *Autonomous ships*
- *Autonomous grasping*
- *Vision-aided navigation*
- *Night/Shadow vision*
- *Sensing for agriculture and food safety*
- *Vision-based autonomous multi-copter*

Theory and Algorithms

- *Imagery/Video exploitation*
- *Object/Target tracking and recognition*
- *Feature extraction and matching*
- *Activity/Pattern learning and recognition*
- *Deep/Transfer/ learning, Domain adaptation*
- *Multimodal/Multi-sensor/INT fusion*
- *Multimodal Geo-registration*
- *3D Reconstruction and Shape modeling*

Visit www.otcbvs.com to download our IR/thermal datasets, submit questions/suggestions and for the latest announcements