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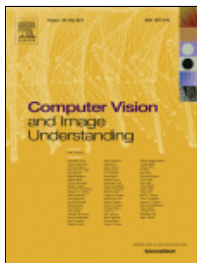
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Computer Vision and Image Understanding

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Computer Vision and Image Understanding
Volume 134, Pages 1-140 (May 2015)
Image Understanding for Real-world Distributed Video Networks
Edited by Andrea Prati, Faisal Qureshi and Bir Bhanu

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- COV2: Ed. Board**
Page IFC
PDF (33 K)
- Optical flow modeling and computation: A survey** Original Research Article
Pages 1-21
Denis Fortun, Patrick Bouthemy, Charles Kervrann
[Abstract](#) | [Close research highlights](#) | [PDF \(2273 K\)](#)

Highlights

- We propose a survey of optical flow estimation focusing on recent developments.
- We adopt a classification approach organizing methods in a comprehensive framework.
- The paper is conceived as a tutorial introducing and explaining the main concepts.

- GOLD: Gaussians of Local Descriptors for image representation** Original Research Article
Pages 22-32
Giuseppe Serra, Costantino Grana, Marco Manfredi, Rita Cucchiara
[Abstract](#) | [Close research highlights](#) | [PDF \(1417 K\)](#)

Highlights

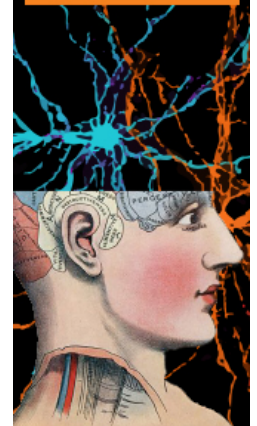
- A flexible local feature representation leveraging parametric probability density functions.
- Projection of the covariance matrix from the Riemannian manifold to the tangent Euclidean space.

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[Volume 131](#)

pp. 1-144 (February 2015)

Special section: Large Scale Data-Driven Evaluation in Computer Vision

[Volumes 121 - 130 \(2014 - 2015\)](#)[Volumes 111 - 120 \(2008 - 2014\)](#)[Volumes 101 - 110 \(2006 - 2008\)](#)[Volumes 91 - 100 \(2003 - 2005\)](#)[Volumes 81 - 90 \(2001 - 2003\)](#)[Volumes 71 - 80 \(1998 - 2000\)](#)[Volumes 61 - 70 \(1995 - 1998\)](#)

Experiments demonstrate the effectiveness of our descriptor in several challenging datasets.

- [Efficient modeling of visual saliency based on local sparse representation and the use of hamming distance](#) Original Research Article

Pages 33-45

Ioannis Rigas, George Economou, Spiros Fotopoulos

[Abstract](#) | [Close research highlights](#) | [PDF \(4119 K\)](#)

Highlights

- A method for the construction of saliency maps is proposed.
- Features are extracted via local sparse coding on image patches.
- The overcomplete dictionary is trained using natural images.
- A bio-plausible scheme based on the Hamming distance is used to compare patch representations.
- The algorithm is efficient both in terms of computational cost and of detection performance.

Special section: Image Understanding for Real-world Distributed Video Networks

- [Editorial introduction to the special issue on "Image Understanding for Real-World Distributed Video Networks" – Computer Vision and Image Understanding Journal](#)

Pages 46-47

Bir Bhanu, Andrea Prati, Faisal Qureshi

[PDF \(202 K\)](#)

- [Analysis-by-synthesis: Pedestrian tracking with crowd simulation models in a multi-camera video network](#) Original Research Article

Pages 48-63

Zhixing Jin, Bir Bhanu

[Abstract](#) | [Close research highlights](#) | [PDF \(4490 K\)](#) | [Supplementary content](#)

Highlights

- Integrate crowd simulators to a multi-camera tracking system and improves the performance.
- Compared two simulators. The one with a more realistic simulation strategy has better results.
- The experiments are conducted on a very challenging dataset for crowds with multiple views.

- [Tracking multiple interacting targets in a camera network](#) Original Research Article

Pages 64-73

Shu Zhang, Yingying Zhu, Amit Roy-Chowdhury

[Abstract](#) | [Close research highlights](#) | [PDF \(2501 K\)](#) | [Supplementary content](#)

Highlights

- We propose a tracker for multiple interacting targets in a camera network.
- A model is developed to decide the group state of each trajectory.
- The tracking problem is converted to a network flow problem.

- [Non-myopic information theoretic sensor management of a single pan-tilt-zoom camera for multiple object detection and tracking](#) Original Research Article

Pages 74-88

Pietro Salvagnini, Federico Pernici, Marco Cristani, Giuseppe Lisanti, Alberto Del Bimbo, Vittorio Murino

[Abstract](#) | [Close research highlights](#) | [PDF \(3065 K\)](#) | [Supplementary content](#)

Highlights

- Detailed derivation of an information theoretic framework for real PTZ management.
- Introduction and implementation of a non-myopic strategy.
- Large experimental validation, with synthetic and realistic datasets.
- Working demonstration of myopic strategy on an off-the-shelf PTZ camera.

 Dynamic task decomposition for decentralized object tracking in complex scenes Original Research Article

Pages 89-104

Tao Hu, Stefano Messelodi, Oswald Lanz

[Abstract](#)[Close research highlights](#)[PDF \(3280 K\)](#)**Highlights**

- Decentralized tracking in multicamera environment is formalized as assignment problem.
- Assignment decomposes tracking task into subtasks under occlusion constraints.
- Assignment is found by minimizing a parameter-free objective function F .
- F derived via information theoretic measure of predicted uncertainty under assignment.
- Min-cost flow solver exploits graph encoding structure of F and occlusion constraints.

 Cross-calibration of time-of-flight and colour cameras Original Research Article

Pages 105-115

Miles Hansard, Georgios Evangelidis, Quentin Pelorson, Radu Horaud

[Abstract](#)[Close research highlights](#)[PDF \(2466 K\)](#)**Highlights**

- Survey of depth-colour calibration methods.
- Novel calibration method based on projective alignment.
- Indepth experimental validation and error analysis.
- Alignment of time-of-flight and colour camera networks.

 Scene shape estimation from multiple partly cloudy days Original Research Article

Pages 116-129

Scott Workman, Richard Souvenir, Nathan Jacobs

[Abstract](#)[Close research highlights](#)[PDF \(6582 K\)](#)[Supplementary content](#)**Highlights**

- Cloud shadows provide geometric constraints on the shape of an outdoor scene.
- Video from several partly cloudy days is sufficient to estimate scene geometry.
- We estimate metric world-point locations for pixels in a calibrated camera.
- We estimate metric world-point locations for pixels in a calibrated camera network.
- We can estimate relative 2D world-point locations without any camera calibration.

 On surveillance for safety critical events: In-vehicle video networks for predictive driver assistance systems Original Research Article

Pages 130-140

Eshed Ohn-Bar, Ashish Tawari, Sujitha Martin, Mohan M. Trivedi

[Abstract](#)[Close research highlights](#)[PDF \(2523 K\)](#)**Highlights**

- A distributed camera-sensor system for driver assistance and situational awareness.
- Systematic, comparative evaluation of cues for prediction of safety critical events.
- Real-time prediction of overtaking and braking maneuvers.
- Detailed temporal analysis of the utility of various cues for maneuver prediction.
- Early prediction (1–2 s) before the maneuver is shown on real-world data.

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