

Soggetto coordinatore	Dipartimento di Informatica Università degli studi di Verona
Titolo del progetto	Suspicious and Abnormal behaviour Monitoring Using a network of cAmeras& sensors for situation awareness enhancement
Acronimo	SAMURAI
Descrizione del progetto	<p>The aim of SAMURAI is to develop and integrate an innovative intelligent surveillance system for robust monitoring of both inside and surrounding areas of a critical public infrastructure site.</p> <p>SAMURAI has three significant novelties that make it distinctive from other recent and ongoing relevant activities both in the EU and elsewhere:</p> <ul style="list-style-type: none"> • SAMURAI is to employ networked heterogeneous sensors rather than CCTV cameras alone so that multiple complementary sources of information can be fused to create a visualisation of a more complete big picture” of a crowded public space. • Existing systems focus on analysing recorded video using pre-defined hard rules, suffering from unacceptable false alarms. SAMURAI is to develop a real-time adaptive behaviour profiling and abnormality detection system for alarm event alert and prediction with much reduced false alarm. • the SAMURAI system will also take command input from control room operators and mobile sensory input for patrolling security staff for a hybrid context-aware based abnormal behavior recognition.
TA/SG	TA 3
Riferimento Bando	FP7-SEC-2007-1
Valore del progetto	€ 3.720.000
Pubblicazioni	<p>* *A. Sedda, V. Manfredi, G. Bottini, M.Cristani, V. Murino,*/Automatic human interaction understanding: lessons from a multidisciplinary approach/*, Frontiers in Human Neuroscience, Vol.6, num 57, 2012</p> <p>*</p> <p>M. Cristani, R. Raghavendra, A. Del Bue, V. Murino,*/Human Behavior Analysis in Video Surveillance: a Social Signal Processing Perspective,/*Neurocomputing,2012, pdf <http://profs.sci.univr.it/%7Ecristanm/Publications_files/NEUROCOM2012Cristani.pdf></p> <p>*</p>

* *L. Bazzani, D. Tosato, M. Cristani, M. Farenzena, G. Pagetti, G. Menegaz, and V. Murino./Social interactions by visual focus of attention in a three-dimensional environment*/. Expert Systems, 2011.

* A. Pesarin, M. Cristani, V. Murino, A. Vinciarelli, */Conversation Analysis at Work: Detection of Conflict in Competitive Discussions through Semi-Automatic Turn-Organization Analysis, /*Cognitive Processing, accepted on 12-09-2011, |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/CognitiveProcessing2011_Cristani.pdf

* M. Cristani, A. Pesarin, C. Drioli, A. Tavano, A. Perina, V. Murino, */Generative modeling and classification of dialogs by a low-level turn-taking feature/*, Pattern Recognition, Volume 44, Issue 8, August 2011, Pages 1785-1800, |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/PR2011_Cristani.pdf

* L. Bazzani, M. Cristani, A. Perina, V. Murino, */Multiple-shot Person Re-identification by Chromatic and Epitomic Analyses/*, Pattern Recognition Letters, Volume 33, Issue 7

<http://www.sciencedirect.com/science/journal/01678655/33/7>, 1 May 2012, Pages 898–903 |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/PRL2012Cristani.pdf

* M. Cristani, M. Farenzena, D. Bloisi, V. Murino, */Background Subtraction for Automated Multisensor Surveillance: a Comprehensive Review/*, EURASIP Journal on Advances in Signal Processing, vol. 2010, Article ID 343057, 2010 |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/EURASIP2010_Cristani.pdf

* M. Cristani, M. Bicego, V. Murino, */Audio-Visual Event Recognition/*, IEEE Transactions on Multimedia, Vol. 9/2 pp. 257-267, February 2007 |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/TMM2007_Cristani.pdf

* M. Bicego, M. Cristani, V. Murino, */Unsupervised Scene Analysis: A Hidden Markov Model Approach/*, Computer Vision and Image Understanding, Vol. 102/1, pp. 22-41, April 2006 |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/CVIU2006_Cristani.pdf

CHAPTERS

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* L. Bazzani, M. Cristani, G. Pagetti, D. Tosato, G. Menegaz, and V. Murino. **Analyzing groups: a social signaling perspective**. In Video Analytics for Business Intelligence, Studies in Computational

Intelligence. Springer-Verlag, 2012.

*

TA3.1 D. S. Cheng, M. Cristani, V. Murino.*/Distillation: a super-resolution approach for the selective analysis of noisy and unconstrained video/*, in Machine Learning for Human Motion Analysis, L.Wang , L.Cheng , G.Zhao, IGI Global, 2009

BOOK CONTRIBUTIONS

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* M. Cristani, M. Bicego, V. Murino, */Audio-video integration for background modelling/*, in Computer Vision - ECCV 2004 (European Conference on Computer Vision, /acceptance rate = 34%/), Lecture Notes in Computer Science 3022, T. Pajdla, J. Matas, Eds., pp. 202-213, Springer, 2004 |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/ECCV2004_Cristani.pdf

CONFERENCES

* M.Cristani, G.Paggetti, A. Vinciarelli, L.Bazzani, G.Menegaz, V.Murino, */Towards Computational Proxemics: Inferring Social Relations from Interpersonal Distances/*, In Proceedings of SOCIALCOM 2011, Boston, October 2011

* M.Cristani, A. Pesarin, A.Vinciarelli, M.Crocco, V.Murino, */Look at Who's Talking: Voice Activity Detection by Automated Gesture Analysis/*, In Proceedings of Workshop of Interactive Human Behavior Analysis in Open or Public Spaces (INTERHUB 2011), Amsterdam, November 2011

* R. Raghavendra, A. Del Bue, M. Cristani and V. Murino,*/Abnormal Crowd Behavior Detection by Social Force Optimization*/, In Proceedings of Int. Workshop on Human Behavior Understanding, Amsterdam, November 2011

* R. Raghavendra, A. Del Bue, M. Cristani and V. Murino, */Optimizing Interaction Force for Global Anomaly Detection in Crowded Scenes/*, In Proceedings of 1st IEEE Workshop on Modeling, Simulation and Visual Analysis of Large Crowds, Barcellona, November 2011

* M.Cristani, L.Bazzani, G.Paggetti, A. Fossati, A.Del Bue, D.Tosato, G.Menegaz, V.Murino, */Social interaction discovery by statistical analysis of F-formations/*, In Proceedings of British Machine Vision Conference, Dundee, August 2011

* M. Cristani, V.Murino, and A. Vinciarelli./*Socially intelligent surveillance and monitoring: Analysing social dimensions of physical space*/.* In First IEEE International Workshop on Socially Intelligent Surveillance and Monitoring (SISM 2010), San Francisco, California, 2010. |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/SISM2010_Cristani.pdf

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* A. Pesarin, P. Calanca, V. Murino, and M. Cristani. */A generative score space for statistical dialog characterization in social signalling/* In Proc. Workshop on Statistical Pattern Recognition, 2010

* M. Farenzena, A. Tavano, L. Bazzani, D. Tosato, G. Paggetti, G. Menegaz, V. Murino, M. Cristani, */Social Interactions by Visual Focus of Attention in a Three-Dimensional Environment/*, Wks on Pattern Recognition and Artificial Intelligence for Human Behaviour Analysis (PRAI*HBA), Dec. 2009. |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/PRAI_HBA09_Cristani.pdf

/

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* M. Farenzena, L. Bazzani, and V. Murino, M. Cristani. */Towards a Subject-Centered Analysis for Automated Video Surveillance/*, In the International Conference on Image Analysis and Processing (ICIAP), 2009 |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/ICIAP2009_Cristani1.pdf

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/

* M. Cristani, A. Pesarin, C. Drioli, A. Perina, A. Tavano and V. Murino. */Auditory Dialog Analysis and Understanding by Generative Modelling of Interactional Dynamics/* Second IEEE Workshop on CVPR for Human Communicative Behavior Analysis, Miami 2009, 103-109 |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/CVPR4HB09_Cristani.pdf

/

/

* A. Pesarin, M. Cristani, V. Murino, C. Drioli and A. Perina, */A statistical signature for automatic dialogue classification*/. In proceedings of the International Conference on Pattern Recognition (ICPR) Tampa, Florida./

/

* M. Cristani and V. Murino. */Time-dependent interactive graphical models for human activity analysis*/. In International Workshop on Advances in Pattern Recognition (IWAPR), Plymouth, July 2007, pp 109-118. |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/IWAPR2007_Cristani.pdf

*

TA3.1 M. San Biagio, M. Crocco, M. Cristani, S. Martelli, V. Murino, */Low-level Multimodal Integration on Riemannian Manifolds for Automatic Pedestrian Detection./*/In Proceedings of 15th International Conference on Information Fusion, Singapore, July 2012

* **

TA3.1 **L. Bazzani, M. Cristani and V. Murino.*/Decentralized Particle Filter for Joint Individual-Group Tracking/* . In Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2012), Providence, 2012

*

TA3.1 **M. San Biagio, M. Crocco, M. Cristani.*/Recursive Segmentation based on Higher Order Statistics in Thermal Imaging Pedestrian Detection/* . In Proceedings of 5th International Symposium on Communications, Control, and Signal Processing, Rome, May 2012

* D.S Cheng, M. Cristani, M. Stoppa, L. Bazzani, V. Murino, */Custom Pictorial Structures for Re-identification/* , In Proceedings of British Machine Vision Conference, Dundee, August 2011

*

TA3.1 **S. Martelli, D. Tosato, M. Cristani, V. Murino,*/FPGA-Based Pedestrian Detection Using Array of Covariance Features/* , In Proceedings of ACM/IEEE International Conference on Distributed Smart Cameras, Belgium, August 2011

* R. Satta, G. Fumera, F. Roli, M. Cristani, Vittorio Murino, */A Multiple Component Matching Framework for Person Re-Identification/* , In Proceedings of IEEE International Conference on Image Analysis and Processing (ICIAP), Ravenna, September 2011

*

*TA3.1** *S. Martelli, D. Tosato, M. Cristani, V. Murino,*/Fast FPGA-Based Architecture for Pedestrian Detection Based on Covariance Matrices/* , In Proceedings of IEEE International Conference on Image Processing (ICIP), Brussels, September 2011

*

*TA3.1** *D.Tosato, M. Farenzena, M. Spera, V.Murino, M.Cristani */Multi-class Classification on Riemannian Manifolds for Video Surveillance/* . ECCV 2010

*

*TA3.1** *D. Tosato, M. Farenzena, M.Cristani and V. Murino.*/Part-based human detection on Riemannian manifolds/* . In Proceedings of IEEE International Conference on Image Processing (ICIP), Hong Kong, September 2010

* L. Bazzani, M. Cristani and V. Murino. */Collaborative particle filters for group tracking/* . In Proceedings of IEEE International Conference on Image Processing (ICIP), Hong Kong, September 2010

* S. Martelli, D. Tosato, M. Farenzena, M. Cristani and V. Murino.

/An FPGA-based Classification Architecture on Riemannian Manifolds/ . In Proceedings of DEXA Workshop on**Interactive Multimodal Pattern Recognition in Embedded Systems , Spain 2010

* M. Farenzena, L. Bazzani, A. Perina, V. Murino, and M. Cristani.

/Person re-identification by symmetry-driven accumulation of local features/ . In Proceedings of IEEE Conference on Computer Vision and Pattern Recognition, 2010. |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/CVPR2010_Cristani.pdf

* L. Bazzani, M. Farenzena, A. Perina, V. Murino, and M. Cristani.
/Multiple-shot person re-identification by hpe signature/,
Proceedings of IEEE Conference on Pattern Recognition, 2010.
*

*TA3.1** *D. Tosato, M. Farenzena, V. Murino, and M. Cristani.* /A re-evaluation of pedestrian detection on riemannian manifolds/* . Proceedings of IEEE Conference on Pattern Recognition, 2010.

* L. Bazzani, M. Cristani, M. Bicego, V. Murino. */Subjective online feature selection for occlusion management in tracking applications/*, Proc. Int. Conf. on Image Processing (ICIP2009) |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/ICIP09_Cristani.pdf

/

* A.Perina, M.Cristani, V.Murino and N.Jojic. /*Capturing video structure with mixture of probabilistic index maps */. In 1th ECCV-workshop on Machine learning for vision-based motion analysis. 10th European Conference on Computer Vision, ECCV, 2008, Marseille, France /

/

* M. Cristani, V.Murino, /*Background subtraction with adaptive spatio-temporal neighborhood analysis*/, Proceedings of VISAPP,International Conference on Computer Vision Theory and Applications 2008, Madeira, PT |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/VISAPP2008_Cristani.pdf

/

* M. Cristani, V.Murino, */A Spatial Sampling Mechanism for Effective Background Subtraction/*, Proceedings of VISAPP,International Conference on Computer Vision Theory and Applications 2007, Vol.2 (Image Understanding, Motion, Tracking and Stereo Vision) pp. 403-410 |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/VISAPP2007_Cristani.pdf

/

* M. Cristani, M.Bicego, V.Murino */Audio-Visual Foreground Extraction for Event Characterization/*, International Workshop on Semantic Learning Applications in Multimedia (SLAM), in association with CVPR 2006 |pdf

http://profs.sci.univr.it/%7Ecristanm/Publications_files/SLAM2006_Cristani.pdf

* A. Colombari, M. Cristani, V.Murino and A.Fusiello */Exemplar-based Background Model Initialization/*, Proceedings of ACM VSSN 2005 Workshop on Video Surveillance and Sensor Networks, pp.29-36, November 2005 |pdf

	<p>http://profs.sci.univr.it/%7Ecristanm/Publications_files/VSSN2005_Cristani.pdf</p> <p>* M. Cristani, D.S. Cheng, V. Murino, D. Pannullo, */Distilling Information with Super-Resolution for Video Surveillance/*, 2nd ACM International Workshop on Video Surveillance and Sensor Networks, New York, USA, pp.2-11, October 2004 pdf</p> <p>http://profs.sci.univr.it/%7Ecristanm/Publications_files/VSSN2004_Cristani.pdf</p> <p>* M. Cristani, M. Bicego, V. Murino, */On-line adaptive background modelling for audio surveillance/*, Int'l Conf. on Pattern Recognition ICPR 2004, Cambridge, UK, Vol.2, pp. 399-402, August 2004 pdf</p> <p>http://profs.sci.univr.it/%7Ecristanm/Publications_files/ICPR04_Cristani.pdf</p> <p>* M. Cristani, M. Bicego, V. Murino, */Multi-level Background Initialization using Hidden Markov Models/*, First ACM SIGMM International Workshop on Video Surveillance, Berkeley, CA, USA, pp. 11-20, Nov. 2003 pdf</p> <p>http://profs.sci.univr.it/%7Ecristanm/Publications_files/IWVS2003_Cristani.pdf</p> <p>* M. Cristani, M. Bicego, V. Murino, */Integrated Region- and Pixel-based Approach to Background Modelling/*, IEEE Wks. on Motion and Video Computing, Orlando, FL, pp. 3-8, Dec. 2002 pdf</p> <p>http://profs.sci.univr.it/%7Ecristanm/Publications_files/WMVC2002_Cristani.pdf</p>
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