



Chalearn Looking at People: Action, Gesture, and Emotion Recognition Workshop and Competitions: Large Scale Multimodal Gesture Recognition and Real versus Fake Expressed Emotions

<http://chalearnlap.cvc.uab.es/>

sergio.escalera.guerrero@gmail.com

Sergio Escalera, Jun Wan, Gholamreza Anbarjafari, Jelena Gorbova,
Hugo Jair Escalante, Xavier Baró, Isabelle Guyon, Meysam Madadi

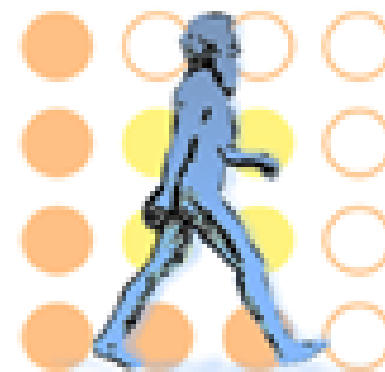
Chalearn and ChaLearn Looking at People

- ChaLearn is a non-profit organization focusing on challenges organization in Machine Learning



<http://chalearn.org>

- ChaLearn Looking at People (ChaLearn LAP) is a branch of ChaLearn focusing on *Human Analysis*.

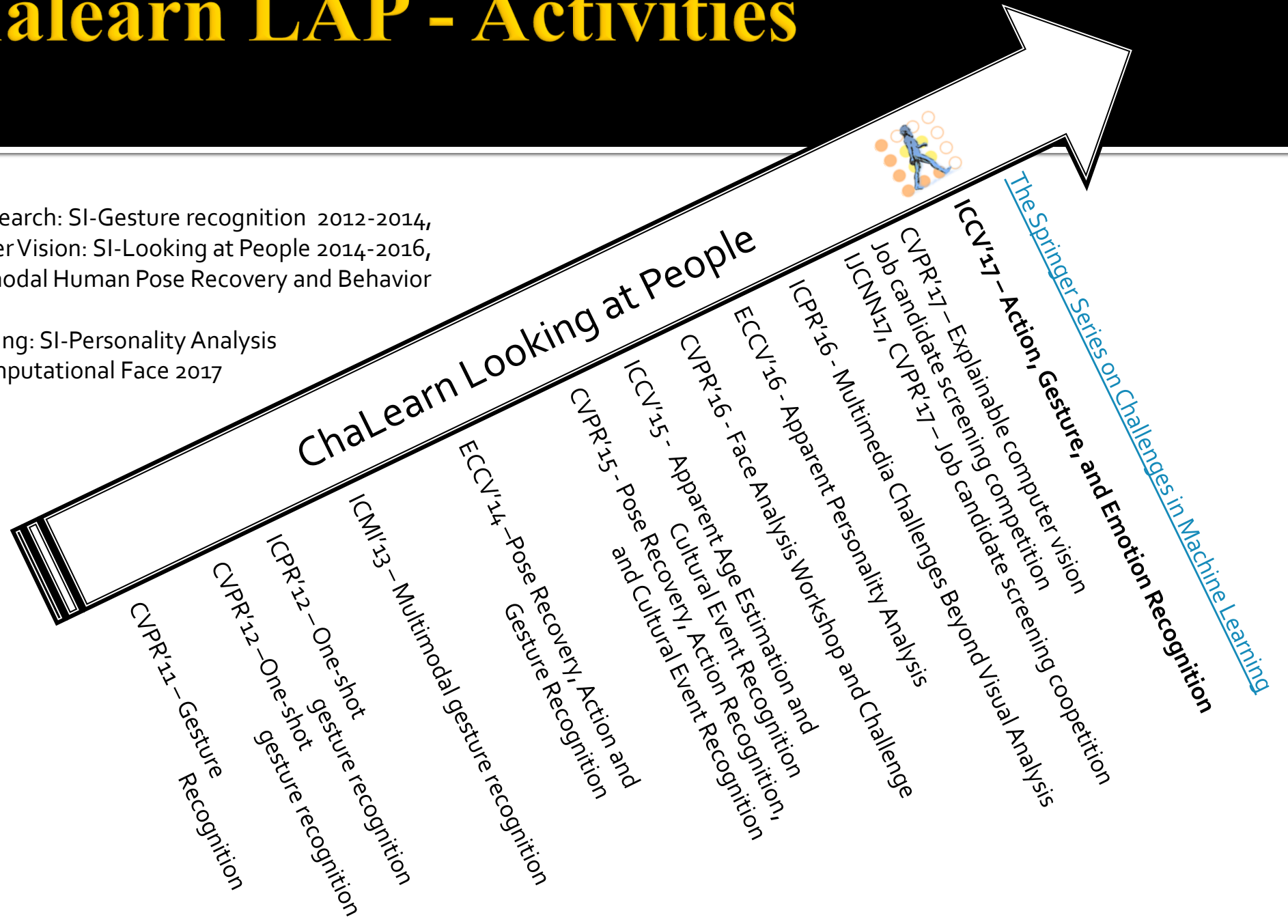


<http://chalearnlap.cvc.uab.es/>

Chalearn LAP - Activities

Associated special issues:

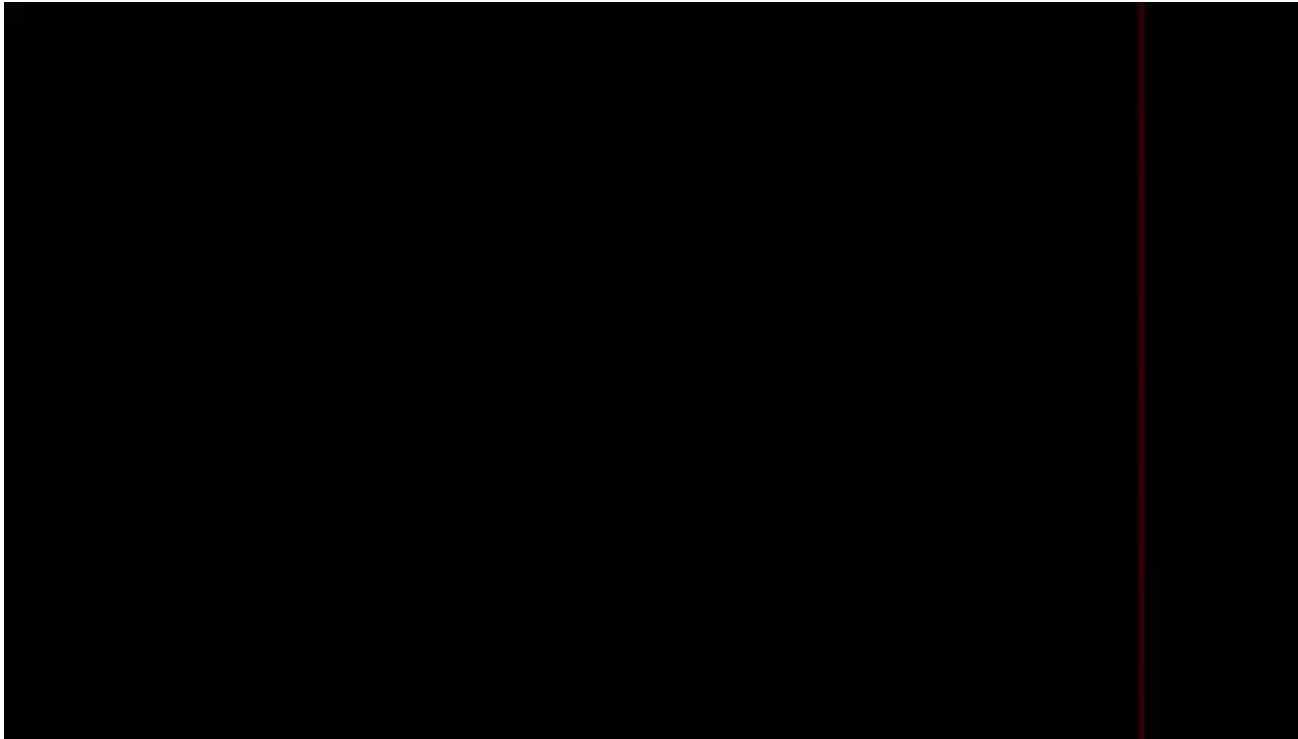
- Journal of Machine Learning Research: SI-Gesture recognition 2012-2014,
- International Journal of Computer Vision: SI-Looking at People 2014-2016,
- IEEE Trans. on PAMI: SI-Multi-modal Human Pose Recovery and Behavior 2016-2017
- IEEE Trans. on Affective Computing: SI-Personality Analysis
- IEEE Trans. on PAMI: SI-The Computational Face 2017



Chalearn LAP – Montalbano multimodal gesture recognition



Chalearn Looking at People



- ✓ ECCV'14 – Pose Recovery, Action and Gesture Recognition
 - ✓ ICMI'13 – Multimodal gesture recognition
 - ✓ ICPR'12 – One-shot gesture recognition
 - ✓ CVPR'12 – One-shot gesture recognition
 - ✓ CVPR'11 – Gesture Recognition
- +14,000 gestures,
 - 20 Italian sign gesture categories,
 - RGB, depth, audio, subject mask and skeleton information,
 - ~1.7M manually labeled frames

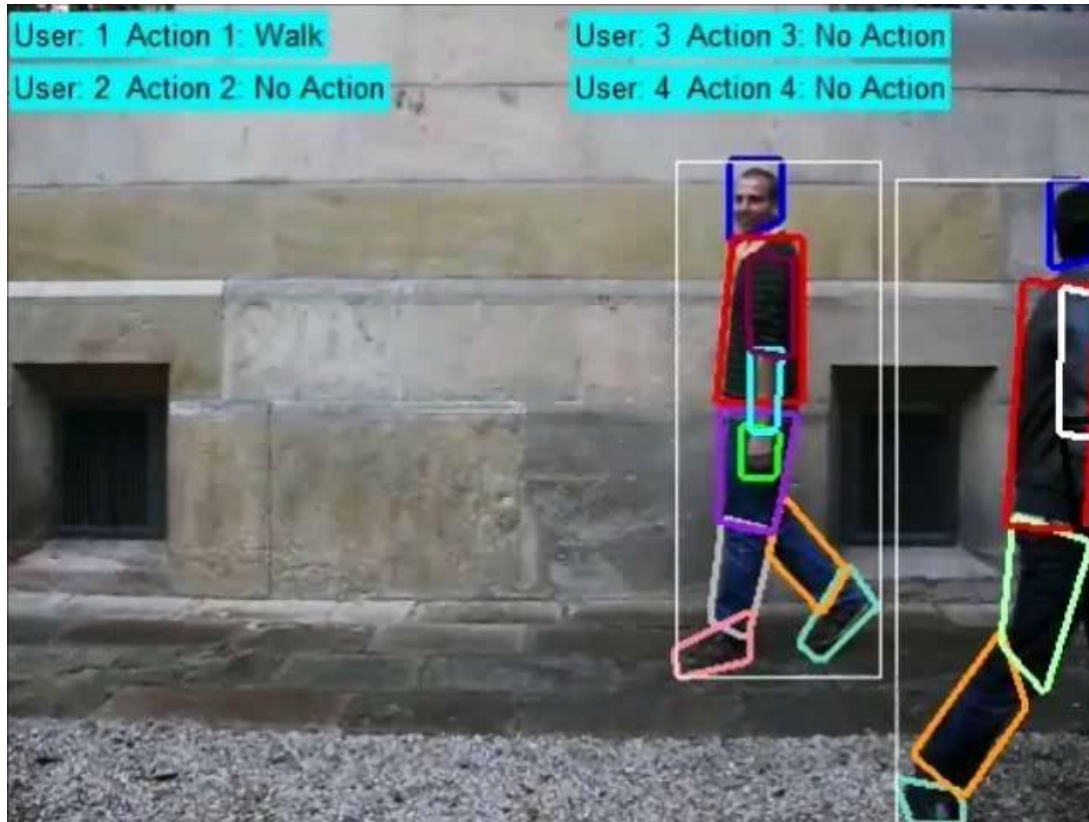
• Sergio Escalera, Jordi González, Xavier Baró, Miguel Reyes, Oscar Lopés, Isabelle Guyon, Vassilis Athitsos, Hugo J. Escalante, [Multi-modal Gesture Recognition Challenge 2013: Dataset and Results](#), Chalearn Multi-Modal Gesture Recognition Workshop, International Conference on Multimodal Interaction, ICMI, 2013.

• Sergio Escalera, Xavier Baró, Jordi González, Miguel A. Bautista, Meysam Madadi, Miguel Reyes, Víctor Ponce, Hugo J. Escalante, Jamie Shotton, Isabelle Guyon, [Chalearn Looking at People Challenge 2014: Dataset and Results](#), Chalearn Looking at People, European Conference on Computer Vision, 2014.

Chalearn LAP – Action, interaction and poses



Chalearn Looking at People



✓ ECCV'14 –Pose Recovery, Action and Gesture Recognition

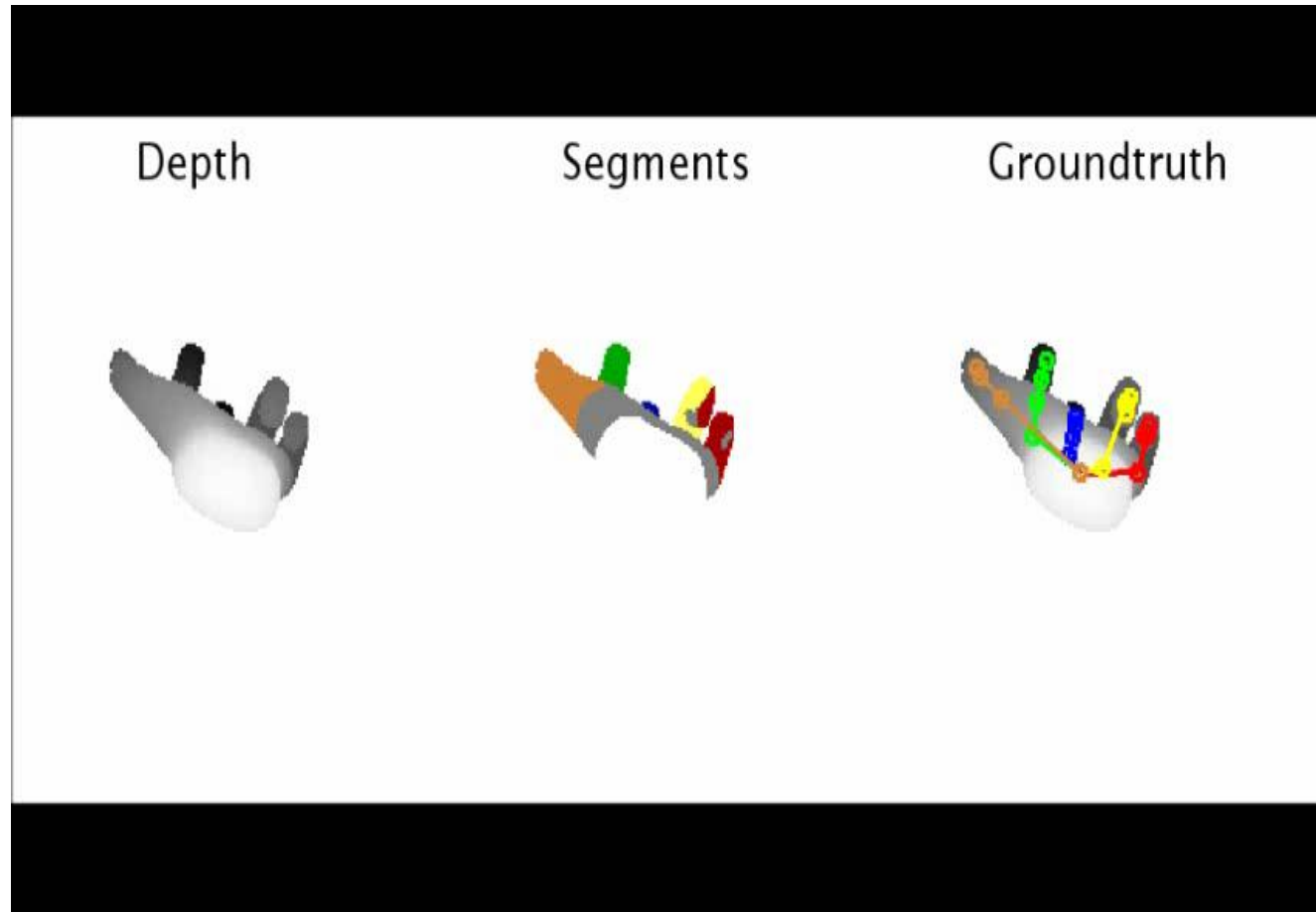
- 7 action categories,
- 4 interaction categories,
- RGB, pose and pixel labeling precision information,
- ~8K labeled frames,
- 14 limb labels.

•Sergio Escalera, Xavier Baro, Jordi Gonzalez, Miguel A. Bautista, Meysam Madadi, Miguel Reyes, Víctor Ponce, Hugo J. Escalante, Jamie Shotton, Isabelle Guyon, [Chalearn Looking at People Challenge 2014: Dataset and Results](#), Chalearn Looking at People, European Conference on Computer Vision, 2014.
•D. Sánchez, and J.C. Ortega, and M.A. Bautista, [Human Body Segmentation with Multi-limb Error-Correcting Output Codes Detection and Graph Cuts Optimization](#), 6th Iberian Conference on Pattern Recognition and Image Analysis, IBPRIA, Madeira, Portugal, 2013. Selected paper for Neurocomputing.

Chalearn LAP – Hand pose from depth



ChaLearn Looking at People



✓ Hand pose recovery dataset from depth images

- +600K hand images,
- +1M mocap data,
- Depth and pixel labeling information,
- 20 hand joints.

• Meysam Madadi, Sergio Escalera, Alex Carruesco Llorens, Carlos Andujar, Xavier Baro, Jordi Gonzalez, Occlusion aware hand pose recovery from sequences of depth images, FG, 2017.

Chalearn LAP – Cultural event recognition



- ✓ ICCV'15 - Apparent Age Estimation and Cultural Event Recognition
- ✓ CVPR'15 - Pose Recovery, Action Recognition, and Cultural Event Recognition
- 100 cultural events,
- +27 countries around the world,
- 28K labeled RGB data.



•Sergio Escalera, Junior Fabian, Pablo Pardo, Xavier Baro, Jordi Gonzalez, Hugo Escalante, Dusan Misevic, Ulrich Steiner, Isabelle Guyon, ChaLearn Looking at People 2015: Apparent Age and Cultural Event Recognition datasets and results, ChaLearn Looking at People workshop, ICCV, 2015.
•Xavier Baro, Jordi Gonzalez, Junior Fabian, Miguel A. Bautista, Marc Oliu, Hugo J. Escalante, Isabelle Guyon, Sergio Escalera, [ChaLearn Looking at People 2015 challenges: action spotting and cultural event recognition](#), CVPR workshops, 2015.

Chalearn LAP – Apparent age estimation

- ✓ CVPR'16 - Face Analysis Workshop and Challenge
- ✓ ICCV'15 - Apparent Age Estimation and Cultural Event Recognition

Input						
Cropped Face						
GT Real	24.00	30.00	25.00	31.00	29.00	18.00
GT Apparent	28.84	34.30	30.11	33.05	34.84	26.16

- 8K images each displaying an individual,
- Labels consisting of,
 - Real and apparent age,
 - Gender,
 - Smile/no-smile,
 - Wearing accessories.

•Eirikur Agustsson, Radu Timofte, Sergio Escalera, Xavier Baro, Isabelle Guyon, Rasmus Rothe, Apparent and real age estimation in still images with deep residual regressors on APPA-REAL database, FG, 2017. **FG 2017 one of the best papers award**

•Sergio Escalera, Junior Fabian, Pablo Pardo, Xavier Baro, Jordi Gonzalez, Hugo Escalante, Dusan Misevic, Ulrich Steiner, Isabelle Guyon, ChaLearn Looking at People 2015: Apparent Age and Cultural Event Recognition datasets and results, ChaLearn Looking at People workshop, ICCV, 2015.

Chalearn LAP – Faces of the world: accessories and gender recognition



- ✓ CVPR'16 - Face Analysis Workshop and Challenge
- 25,000 images collected from flickr

Accessory	Train	Validation	Test
Hat	1151	608	869
Headband	243	109	193
Glasses	1232	614	828
Earrings	770	389	592
Necklace	615	300	559
Tie	151	72	220
Scarf	256	137	256

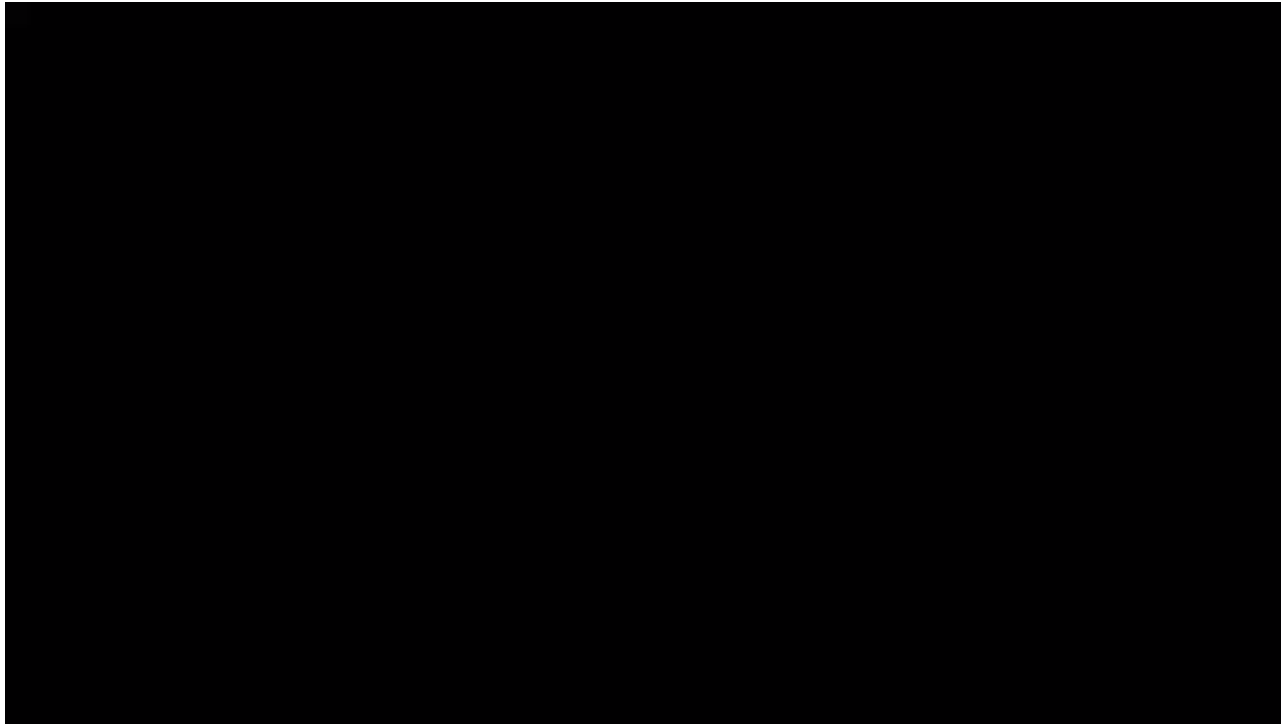
Attribute	Train	Validation	Test
Male	2946	1691	4614
Female	3318	1361	3799
Smile	2234	1969	4411
No Smile	3937	1117	3849

- Sergio Escalera, Mercedes Torres-Torres, Brais Martinez, Xavier Baró, Hugo Jair Escalante, Isabelle Guyon, Georgios Tzimiropoulos, Ciprian Corneou, Marc Oliu Simón, Mohammad Ali Bagheri, Michel Valstar, [Chalearn Looking at People and Faces of the World: Face Analysis Workshop and Challenge 2016](#), CVPRW, CVPR, 2016.

Chalearn LAP – Apparent personality



NIPS 2016 Demo



- ✓ CVPR'17 – Explainable computer vision and Job candidate screening competition
- ✓ IJCNN17, CVPR'17 – Job candidate screening competition
- ✓ ICPR'16 - Multimedia Challenges Beyond Visual Analysis
- ✓ ECCV'16 - Apparent Personality Analysis



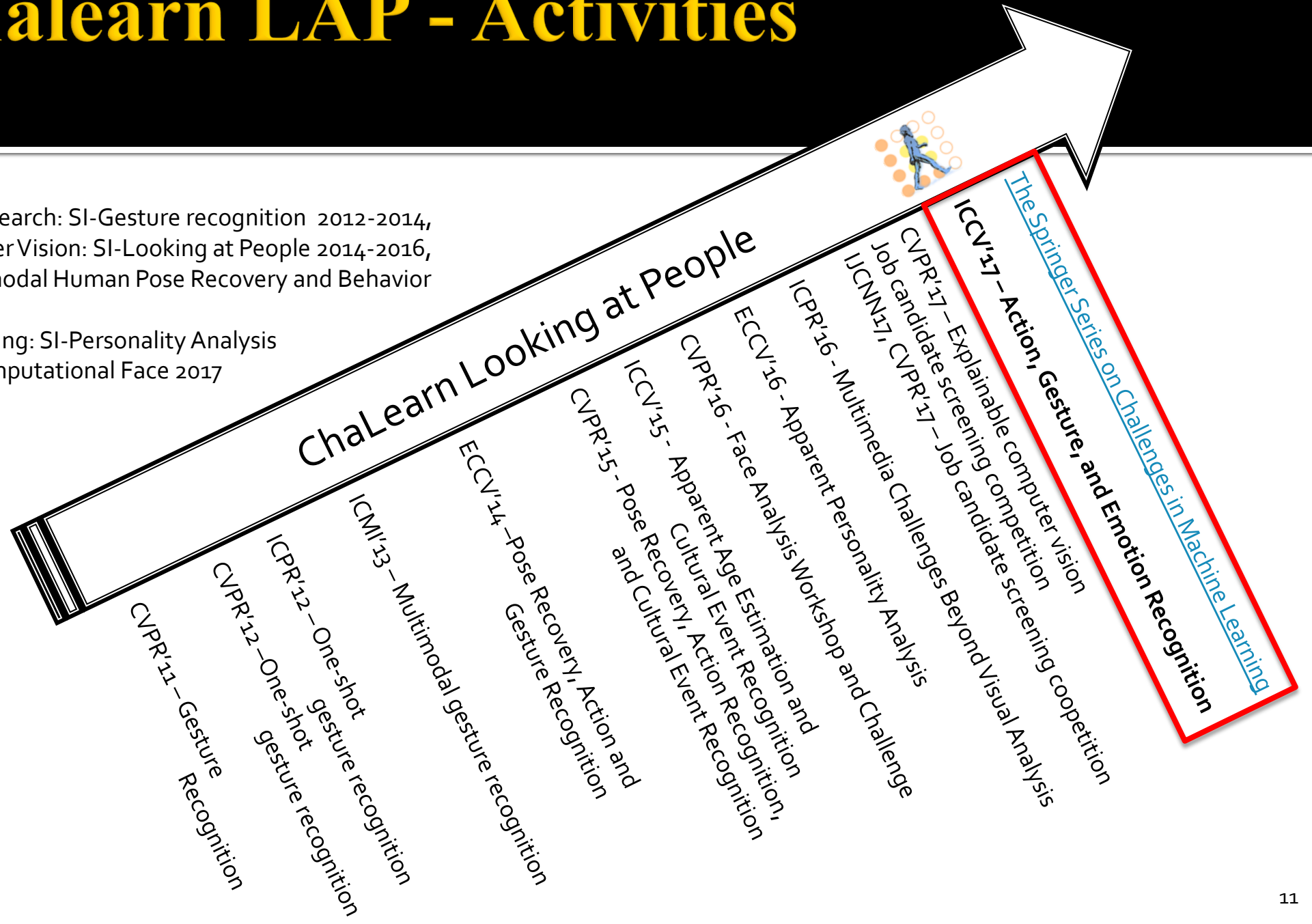
- +10K 15s video,
- Big **five** personality traits,
- Video transcription.

• Víctor Ponce-López, Baiyu Chen, Marc Oliu, Ciprian Corneanu, Albert Clapés, Isabelle Guyon, Xavier Baró, Hugo Jair Escalante, Sergio Escalera, Chalearn LAP 2016: First Round Challenge on First Impressions – Dataset and Results, Chalearn Apparent Personality Analysis workshop, ECCV, 2016.

Chalearn LAP - Activities

Associated special issues:

- Journal of Machine Learning Research: SI-Gesture recognition 2012-2014,
- International Journal of Computer Vision: SI-Looking at People 2014-2016,
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- IEEE Trans. on Affective Computing: SI-Personality Analysis
- IEEE Trans. on PAMI: SI-The Computational Face 2017



ICCV 2017 workshop scope

- The scope of the workshop comprises all aspects of **Large-scale Action/Gesture Recognition, and Emotion Recognition**. Including but not limited to the following topics:
 - Large scale action and gesture recognition
 - Multi-modal action and gesture recognition
 - Fake vs. true emotion recognition
 - Temporal domain based human behavior analysis
 - Simultaneous gesture/action spotting and recognition
 - Applications of gesture and action, such as smart surveillance systems, human-computer interaction

Track 1 and 2: Large-scale Gesture Recognition Challenge (Round 2)

Track 3: Real Versus Fake Expressed Emotions Challenge

Round 1: Both IsoGD and ConGD challenges were hold before ICPR workshop 2016.

- **Track 1: Isolated Multi-modal Gesture Recognition Challenge**
 - Objective: Predicting dynamic gesture from RGB-D videos. Each RGB-D video per gesture
 - Large-scale gesture recognition
 - User Independent: users in the training set do not disappear in test and validation set
- **Track 2: Continuous Gesture Recognition Challenge**
 - Objective: Gesture spotting and recognition from continuous RGB-D videos. Each RGB-D video
 - Large-scale gesture recognition
 - User Independent: users in the training set do not disappear in test and validation set
- **Track 3: Real vs Fake expressed emotions Challenge**
 - Objective: Recognition of fakeness of an emotion, Recognition of fake/true specific emotion

Track 1 and 2: Large-scale Gesture Recognition Challenge (Round 2)

Track 3: Real Versus Fake Expressed Emotions Challenge

- We provided data, evaluation metrics, evaluation platform and forum for dissemination of results
- Phases:
 - **Development and Validation.** Labeled training data and unlabeled validation data was for available to participants.
 - **Final test. Labeled validation data and unlabeled** test data provided to participants. Participants submit predictions, code, and method report.
- **Evaluation:** Prediction submission and scoring through CodaLab, an open-source platform. <http://codalab.org>



Track 1 and 2: Large-scale Gesture Recognition Challenge (Round 2)

Both IsoGD and ConGD are from Chalearn one-shot learning gesture dataset 2012.

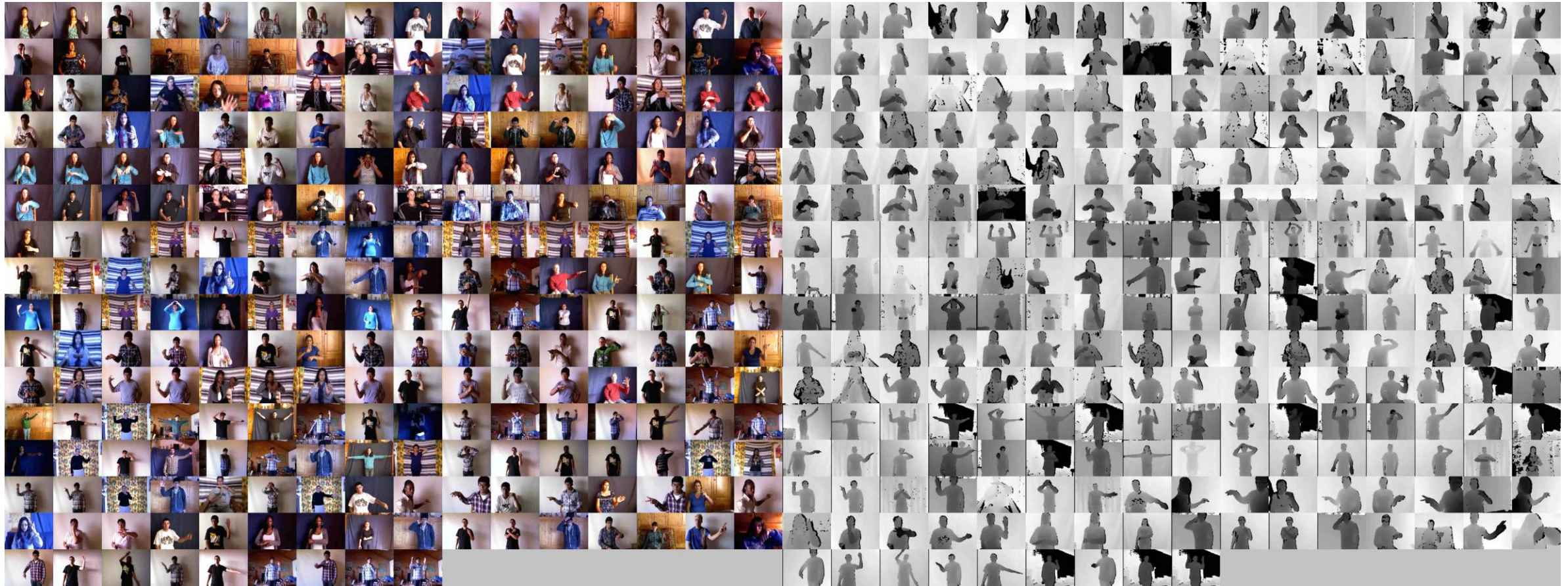
- **Isolated Gesture Dataset (IsoGD)**

Sets	# Labels	#gestures	#RGB videos	#depth videos	# performers
Training	249	35878	35878	35878	17
Validation	249	5784	5784	5784	2
Testing	249	6271	6271	6271	2
Total	249	47933	47933	47933	21

- **Continuous Gesture Dataset (ConGD)**

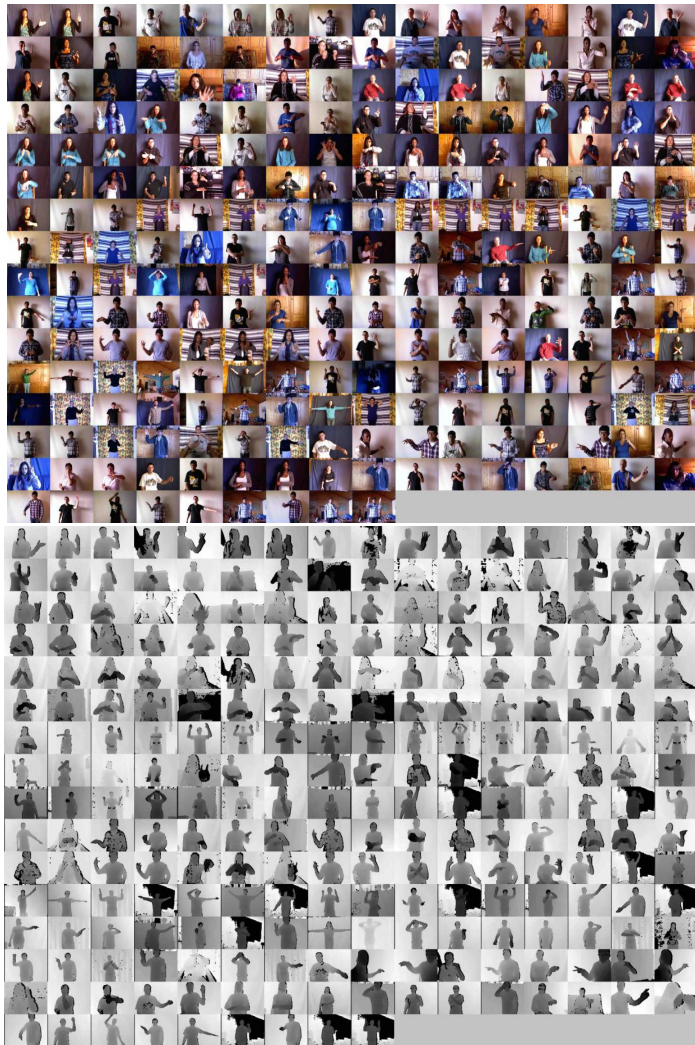
Sets	# Labels	#gestures	#RGB videos	#depth videos	# performers
Training	249	30442	14314	14314	17
Validation	249	8889	4179	4179	2
Testing	249	8602	4042	4.42	2
Total	249	47933	22535	22535	21

Track 1 and 2: Large-scale Gesture Recognition Challenge (Round 2)



249 class categories

Track 1 and 2: Large-scale Gesture Recognition Challenge (Round 2)



249 class categories

Track 1 and 2: Large-scale Gesture Recognition Challenge (Round 2)

- Final Ranking Results (**Isolated** Gesture Recognition Challenge)

Rank by test set	Team Name	Recognition rate (valid test)	Recognition rate (test set)
ROUND 2 (ICCV Workshops 2017)			
1	ASU	64.40%	67.71%
2	SYSU_ISEE	59.70%	67.02%
3	lostoy	62.02%	65.97%
ROUND 1 (ICPR Workshops 2017)			
1	FLiXT [1]	49.20%	56.90%
2	AMRL [2]	39.23%	55.57%
3	XDETVP-TRIMPS [3]	45.02%	50.93%

Improve
10.81%
accuracy

[1] Y. Li, Q. Miao, K. Tian, Y. Fan, X. Xu, R. Li, and J. Song, "Large-scale gesture recognition with a fusion of rgb-d data based on the c3d model," in ICPR, pp. 25–30, 2016.

[2] P. Wang, W. Li, S. Liu, Z. Gao, C. Tang, and P. Ogunbona, "Large-scale isolated gesture recognition using convolutional neural networks," in ICPR, pp. 7–12, 2016.

[3] G. Zhu, L. Zhang, L. Mei, J. Shao, J. Song, and P. Shen, "Large-scale isolated gesture recognition using pyramidal 3d convolutional networks," in ICPR, pp. 19–24, 2016.

Track 1 and 2: Large-scale Gesture Recognition Challenge (Round 2)

- Final Ranking Results (**Isolated** Gesture Recognition Challenge)

Winners Information (Round 2)

Place	Team Name	Authors	University
1	ASU	Yunnan Li, Weikang Shi, Xin Xu, Zhenxin Ma, Qiguang Miao	Xidian University, China
2	SYSU_ISEE	Wanhua Li, Jian-Fang Hu, Benchao Li, Wei-shi Zheng	Sun Yat-sen University, China
3	lostoy	Yingwei Li	University of California, San Diego (UCSD), USA

Track 1 and 2: Large-scale Gesture Recognition Challenge (Round 2)

- Final Ranking Results (**Continuous** Gesture Recognition Challenge)

Rank by test set	Team Name	Mean Jaccard Index (valid test)	Mean Jaccard Index (test set)
ROUND 2 (ICCV Workshops 2017)			
1	ICT_NHCI	0.5163	0.6103
2	AMRL	0.5957	0.5950
3	PaFiFA	0.3646	0.3744
ROUND 1 (ICPR Workshops 2017)			
1	ICT_NHCI [1]	0.2655	0.2869
2	TARDIS [2]	0.2809	0.2692
3	AMRL [3]	0.2403	0.2655

Improve 0.3234
(Mean Jaccard Index)

[1] X. Chai, Z. Liu, F. Yin, Z. Liu, and X. Chen, "Two streams recurrent neural networks for large-scale continuous gesture recognition," in ICPR, pp. 31–36, 2016.

[2] N. C. Camgoz, S. Hadfield, O. Koller, and R. Bowden, "Using convolutional 3d neural networks for user-independent continuous gesture recognition," in ICPR, pp. 49–54, 2016.

[3] P. Wang, W. Li, S. Liu, Y. Zhang, Z. Gao, and P. Ogunbona, "Large-scale continuous gesture recognition using convolutional neural networks," in ICPR, pp. 13–18, 2016.

Track 1 and 2: Large-scale Gesture Recognition Challenge (Round 2)

- Final Ranking Results (**Continuous** Gesture Recognition Challenge)

Winners Information (Round 2)

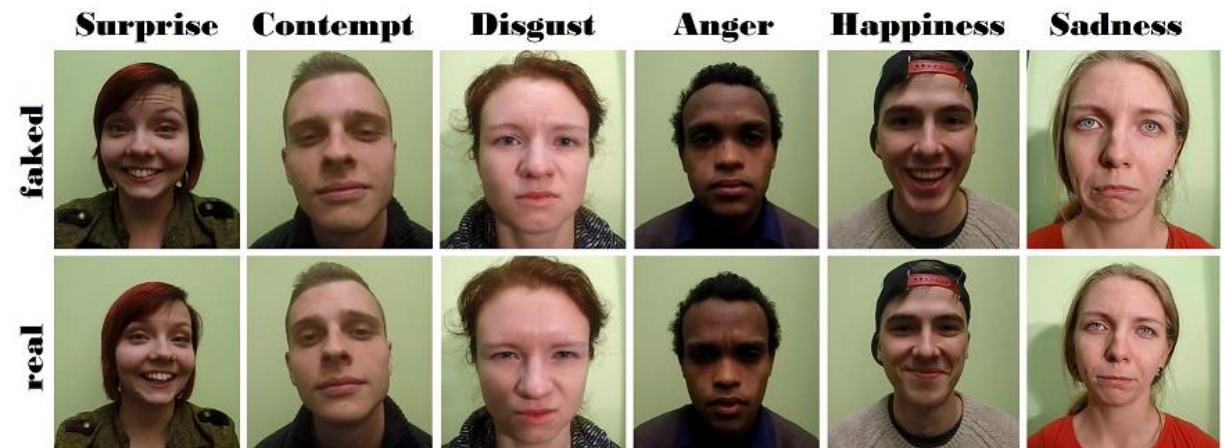
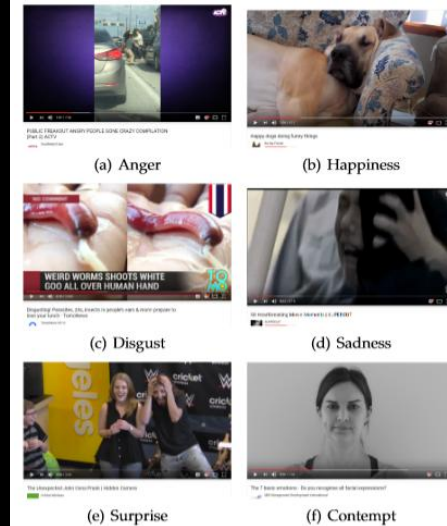
Place	Team Name	Authors	University
1	ICT_NHCI	Xiujuan Chai, Zhipeng Liu, Zhuang Liu and Xilin Chen	Institute of Computing Technology, Chinese of Academy Sciences, China
2	AMRL	Huogen Wang, Pichao Wang, Zhanjie Song, Wanqing Li	University of Wollongong, Australia; Tianjin University, China
3	PaFiFA	Necati Cihan Camgoz, Simon Hadfield, Richard Bowden	University of Surrey, UK

Track 3: Real Versus Fake Expressed Emotions Challenge

- Recognition of fakeness of an emotion
- Recognition of fake/true specific emotion
- 6 basic emotions
- 100FPS

■ SASE-FE Dataset

Sets	# Labels	# Videos	# Performers
Training	12	480	40
Validation	12	60	5
Test	12	60	5
Total	12	600	50



Track 3: Real Versus Fake Expressed Emotions Challenge

- Final Ranking Results

Rank by test set	Team Name	Rate (validation set)	Rate (test set)
1	NIT-OVGU	76.7%	66.7%
1	HCILab	71.7%	66.7%
3	TUBITAK UZAY-METU	61.7%	65.0%

Place	Team Name	Authors	University
1	NIT-OVGU	Philipp Werner, Frerk Saxen	Otto von Guericke University Magdeburg, Germany
2	HCILab	Huynh Xuan Phung, Yong-Guk Kim	Sejong University, South Korea
3	TUBITAK UZAY-METU	Savas Ozkan, Dr. Gozde Bozdagi Akar	Middle East Technical University, Turkey

Workshop program (Sun 29 Oct, PM)

Start Time	Paper/Talk Title	Speaker/Author(s)
14:00	Welcome (Opening of contest; Overview of results)	
14:15	Invited Talk 1: Weakly Supervised Learning of Actions	Juergen Gall (CVC, Bonn, Germany)
15:00	Oral Presentation 1: Multimodal Gesture Recognition Based on the ResC3D Network	Qiguang Miao; Yunan Li; Wanli Ouyang; zhenxin ma; Xin Xu; weikang shi; Xiaochun Cao
15:10	Oral Presentation 2: Continuous Gesture Recognition with Hand-oriented Spatiotemporal Feature	Liu Zhipeng; Xiujuan Chai; Liu Zhuang; Xilin Chen
15:20	Oral Presentation 3: Discrimination between genuine versus fake emotion using long-short term memory with parametric bias and facial landmark	Phung Xuan Huynh; Yong-Guk Kim
15:30	Oral Presentation 4: Real vs. Fake Emotion Challenge: Learning to Rank Authenticity From Facial Activity Descriptors	Frerk Saxen; Philipp Werner; Ayoub Al-Hamadi
15:45	Coffee Break Poster Session and Awards Ceremony	
16:30	Invited Talk 2: Learning from Video Without Manual Supervision	Ivan Laptev (INRIS, Paris)
17:15	Invited Talk 3: Action Recognition based on 3D Human Body Joints	Wang Gang (Alibaba AI Labs)
18:00	Closing	



The Springer Series on Challenges in Machine Learning

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ISSN: 2520-131X



Gesture Recognition

Series: » The Springer Series on Challenges in Machine Learning

Escalera, Sergio, Guyon, Isabelle, Athitsos, Vassilis (Eds.)
2017

~ Call for Papers~ Machine Vision and Applications Journal

Special Issue on Human Abnormal Behavioural Analysis



Important dates:

Manuscript Due: Feb 06, 2018

First notification: March 15, 2018

Final Decision: July 31, 2018

Publication Date: September 31, 2018

You can submit your manuscript via <https://www.editorialmanager.com/mvap> . The format of the paper and page limits are the same as the MVAP regulations.

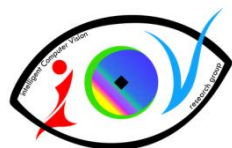
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Microsoft



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Want to join Chalearn LAP and collaborate?
Send us your challenge proposal to receive support for organizing
your activity and sponsoring

<http://chalearnlap.cvc.uab.es/>
sergio.escalera.guerrero@gmail.com

Thank you!