

The Visual Object Tracking Challenge VOT2017

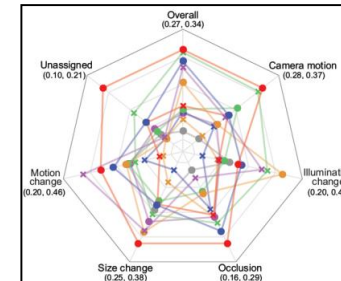
Welcome from VOT organizers

Matej Kristan, Aleš Leonardis, Jiri Matas, Michael Felsberg, Roman Pflugfelder,
Luka Čehovin, Gustavo Fernandez, Alan Lukežič, Tomaš Vojir, Gustav Hager,
Abdelrahman Eldesokey

The emergence of VOT initiative

„Although tracking itself is by and large a solved problem...“
-- Jianbo Shi & Carlo Tomasi CVPR1994 --

- The **VOT initiative** (February 2013)
- Goal: Establish evaluation standards -> development of trackers
- Four pillars of VOT:
 - Evaluation system
 - Datasets
 - Evaluation methodology
 - Community building (VOT challenges)



VOT2013 benchmark

The first challenge introduced a new evaluation kit plus 16 well-known short videos. 27 single-target trackers submitted by 51 participants participated at the challenge. The results were published in a joint paper presented at an ICCV2013 workshop which was attended by over 70 researchers.



VOT2014 benchmark

The second challenge introduced several improvements in annotations and testing of statistical significance, new set of 25 sequences and an improved evaluation kit. The results were published in a joint paper presented at an ECCV2014 workshop.



VOT2015 benchmark

The third challenge introduced a dataset of 60 challenging sequences, a formalized sequence selection methodology and improvements to evaluation methodology. The results were published in a joint paper presented at an ICCV2015 workshop.



VOT2016 benchmark

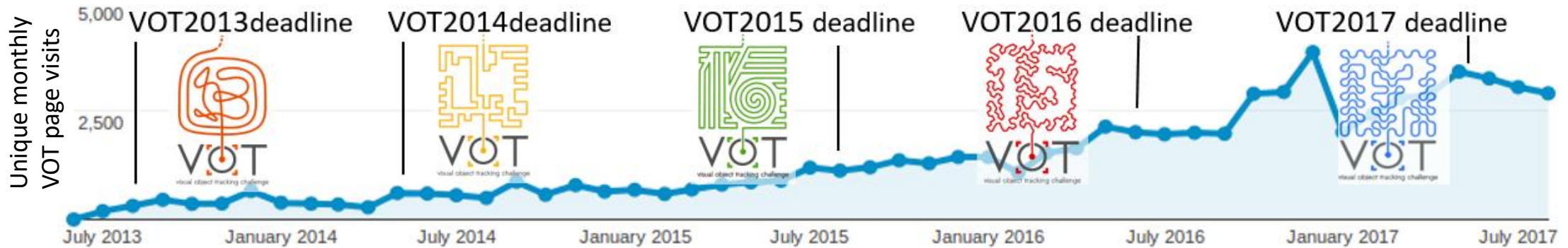
The fourth challenge updated the dataset of 60 sequences with new annotations. The results were published in a joint paper presented at a workshop at ECCV2016.







VOT2017 challenge

The VOT2017 challenge will be the 5th visual object tracking challenge. Results will be presented at VOT workshop at ICCV2017. This year the VOT dataset has been refreshed, the winner will be determined on sequestered dataset and a real-time experiment has been introduced.

The VOT challenge evolution



	Perf. Measures	Dataset size	Target box	Property	Trackers tested
VOT2013	ranks, A, R	16, manual select.	 manual	per frame	27
VOT2014	ranks, A, R, EFO	25, manual select.	 manual	per frame	38
VOT2015	EAO, A, R, EFO	60, fully auto	 manual	per frame	62 VOT, 24 VOT-TIR
VOT2016	EAO, A, R, EFO	60, fully auto	 auto	per frame	70 VOT, 24 VOT-TIR

- Gradual increase of **dataset size** and refinement of **dataset construction**
- Gradual refinement of **performance measures**
- Gradual increase of **state-of-the-art trackers tested**
- Push toward **public availability of tracker code** (39 trackers in VOT2016)

VOT 2017 people & sponsors

Organizing committee

- Matej Kristan,
- Aleš Leonardis
- Jiří Matas
- Michael Felsberg
- Roman Pflugfelder

Technical committee

- Luka Čehovin,
- Gustavo Fernández,
- Tomáš Vojíš
- Gustav Häger
- Alan Lukežič

Program committee

- Cher Heng,
- Federico Pernici,
- Jörgen Ahlberg,
- Kyoung Mu Lee,
- Larry Davis,
- Michael Arens,
- Peter Roth,
- Richard Bowden

VOT2017 workshop sponsors:



Abdelrahman Eldesokey⁴, A´lvaro Garc´ia-Mart´in²⁴, A. Muhic¹, Alfredo Petrosino³⁴, Alireza Memarmoghadam²⁹, Andrea Vedaldi³¹, Antoine Manzanera¹¹, Antoine Tran¹¹, Aydın Alatan²⁰, Bogdan Mocanu^{18,35}, Boyu Chen¹⁰, Chang Huang¹⁵, Changsheng Xu⁹, Chong Sun¹⁰, Dalong Du¹⁵, David Zhang¹⁴, Dawei Du²⁸, Deepak Mishra¹⁷, Erhan Gundogdu^{6,20}, Erik Velasco-Salido²⁴, Fahad Shahbaz Khan⁴, Francesco Battistone³⁴, Gorthi R K Sai Subrahmanyam¹⁷, Goutam Bhat⁴, Guan Huang¹⁵, Guilherme Bastos²⁵, Guna Seetharaman²², Hongliang Zhang²¹, Houqiang Li³², Huchuan Lu¹⁰, Isabela Drummond²⁵, Jack Valmadre³¹, Jae-chan Jeong¹², Jae-il Cho¹², Jae-Yeong Lee¹², Jana Noskova³, Jianke Zhu³⁶, Jin Gao⁹, Jingyu Liu⁹, Ji-Wan Kim¹², Jo˜ao F. Henriques³¹, Jos´e M. Mart´inez²⁴, Junfei Zhuang⁷, Junliang Xing⁹, Junyu Gao⁹, Kai Chen¹⁶, Kannappan Palaniappan³⁰, Karel Lebeda²³, Ke Gao³⁰, Kris M. Kitani⁸, Lei Zhang¹⁴, Lijun Wang¹⁰, Lingxiao Yang¹⁴, Longyin Wen¹³, Luca Bertinetto³¹, Mahdieh Poostchi³⁰, Martin Danelljan⁴, Matthias Mueller¹⁹, Mengdan Zhang⁹, Ming-Hsuan Yang²⁷, Nianhao Xie²¹, Ning Wang³², Ondrej Miksik³¹, P. Moallem²⁹, Pallavi Venugopal M¹⁷, Pedro Senna²⁵, Philip H. S. Torr³¹, Qiang Wang⁹, Qifeng Yu²¹, Qingming Huang²⁸, Rafael Mart´in-Nieto²⁴, Richard Bowden³³, Risheng Liu¹⁰, Ruxandra Tapu^{18,35}, Simon Hadfield³³, Siwei Lyu²⁶, Stuart Golodetz³¹, Sunglok Choi¹², Tianzhu Zhang⁹, Titus Zaharia¹⁸, Vincenzo Santopietro³⁴, Wei Zou⁹, Weiming Hu⁹, Wenbing Tao¹⁶, Wenbo Li²⁶, Wengang Zhou³², Xianguo Yu²¹, Xiao Bian¹³, Yang Li³⁶, Yifan Xing⁸, Yingruo Fan⁷, Zheng Zhu^{9,28}, Zhipeng Zhang⁹, and Zhiqun He⁷

VOT2017 workshop program

- 08.30-9.30 **Oral session I** (chair: Jiří Matas)
 - 08.30 The VOT2017 and VOT-TIR2017 challenge results
 - 09.15 **Invited talk:** The VOT2017 winning tracker
- 09.30 **Spotlight presentations** (chair: Roman Pflugfelder)
- 10.00-11.00 **Poster session + coffee** (chair: Roman Pflugfelder)
 - Zhu et al., UCT: Learning Unified Convolutional Networks for Real-time Visual Tracking
 - Böttger et al., The Benefits of Evaluating Tracker Performance using Pixel-wise Segmentations
 - He et al., Correlation Filters with Weighted Convolution Responses
 - Li et al., Integrating Boundary and Center Correlation Filters for Visual Tracking with Aspect Ratio Variation
 - Yang et al., Recurrent Filter Learning for Visual Tracking
- 11.00-12.00 **Oral session II** (chair: Aleš Leonardis)
 - 11.00 **Keynote Talk:** Davide Scaramuzza (*Robust, Visual-Inertial State Estimation: from Frame to Event Cameras*)
 - 11.30 **Invited talk:** The VOT2017 realtime challenge best performing tracker
 - 11.45 **Industry invited short talk:** Schulte and Lablack, Advantages & Challenges of Thermal Imaging, FLIR
- 12.00-12.30 **Panel** (chair: Michael Felsberg)
- 12.30 **Closing remarks**