$50K OpenCV Challenge

Overview

The OpenCV Challenge targets 11 Computer Vision categories: image segmentation, image registration (e.g., feature extraction and matching), human pose estimation, vision-based Simultaneous Localization and Mapping (SLAM), multi-view stereo matching, object recognition, face recognition, gesture recognition, action recognition, text recognition, and tracking.

OpenCV will offer an award pool of $50,000 split between the list of vision benchmarks below as follows:

1. **You may enter in any number of categories.**
2. **The top winners in each category will be announced.**
3. **From these, the prize committee will select the top 5 winners based on judgements of innovation, computational efficiency/speed and percent improvement on past scores[1].**
4. **Each winner will receive $1000 for winning.**
5. **An additional $7500 to $9000[2] will be awarded for submitting the algorithm as an OpenCV pull request within the following year.**

The implementation submissions may be developed in any programming language. For the full prize, the winners must commit to translate their code to C/C++ in an OpenCV compliant format in order to be eligible for the award. In order to win the full amount, the code must be submitted under the BSD license (meaning all used 3rd party code should also have a BSD or compatible license).

Self-Reporting Performance Evaluation

Besides source code, participants are required to send a performance evaluation report of their algorithms. Both source code and evaluation report should be sent to vision-challenges@opencv.org.

Except for tracking, there are 2 benchmark datasets in each category below. Participants will use these benchmarks to quantitatively evaluate the quality and accuracy of their algorithms. It is expected that a participant's solution should outperform or be close to the state-of-the-art algorithm. *Older algorithms can still win as long as it is the submitter's own code. You do not have to be the author of the older algorithm in such case, but you do have to be the author of the code.*

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[1] You <u>may</u> submit the same algorithm that previously won that category (0% improvement on state of the art can still win). You do <u>not</u> have to be author of the algorithm, you <u>do</u> have to be author of the code.
[2] We will have a professional programmer assist people with their pull requests. Depending on how much total time the programmer takes, the final amount of the prize will be adjusted. The minimum will be $7500 additional dollars for a pull request.

The list of vision benchmark datasets

Building Block	Dataset Benchmarks
Image Segmentation	The Berkeley Segmentation Dataset and Benchmark Weizmann Segmentation Evaluation Database
Image Registration	Affine Covariant Regions Datasets Robot Data Set
Human Pose Estimation	PARSE Dataset HumanEva Dataset
SLAM	KITTI Vision Benchmark, Odometry, Stereo (Method uses left and right "stereo" images) TUMindoor Dataset
Multiview Stereo Matching	Stereo – Middlebury Computer Vision EPFL Multi-View Stereo
Object Recognition	ImageNet SUN Database, Scene Recognition Benchmark
Face Recognition	Labeled Faces in the Wild, Unrestricted, Labeled Outside Data OUI-Adience Face Image Project
Gesture Recognition	Sheffield Kinect Gesture Dataset ChaLearn Looking at People
Action Recognition	HMDB: A Large Human Motion Database Sports-1M Dataset
Text Recognition	The Chars74K Dataset The Street View Text Dataset
Tracking	VOT2014

How to start work on Challenge

There is no registration requirement to begin work on the challenge. Participants may select a category (or even categories!) where they would like to win and start coding. Teams of any size can work on the challenge. Participants from all countries are allowed. Since money transfer is impossible or complicated for some countries, a participant should have an international bank account in order to get payment if that is the case.

The implementation programming language is not fixed, but for full prize money, winners will have to port their algorithm to OpenCV. Hence, using OpenCV and C++ is recommended to begin with. We also prepared a [datasets](#) module to simplify work with datasets. Documentation of this module is available [here](#).

Useful OpenCV links:
- Homepage: http://opencv.org
- Q&A forum: http://answers.opencv.org
- DevZone: http://code.opencv.org
- Documentation:
  http://opencv.org/documentation.html
  http://docs.opencv.org/3.0-beta/
- Tutorials:
  http://docs.opencv.org/master/doc/tutorials/tutorials.html
  http://docs.opencv.org/master/doc/py_tutorials/py_tutorials.html
- Downloads: http://opencv.org/downloads.html
- Installation:
  http://docs.opencv.org/master/doc/tutorials/introduction/table_of_content_introduction/table_of_content_introduction.html
  http://docs.opencv.org/master/doc/py_tutorials/py_setup/py_table_of_contents_setup/py_table_of_contents_setup.html

Winning Algorithm Selection

A committee nominated by OpenCV will select implementation winners. OpenCV will identify existing algorithms for each building blocks with reported performance in the benchmark datasets selected above. OpenCV will set a minimum performance target close to the best reported performance (i.e., state-of-the-art). Only the participants who submit source code and evaluation reports at/above this level of quality will be eligible to win the prize.

If multiple participants satisfy this requirement, the 5 best performers will be selected by the committee to be carefully evaluated. A quantitative performance characterization of these algorithm finalists will be performed according to the same evaluation methodology specified to the authors. OpenCV may use additional testing data to enhance this methodology. The committee will decide on the best tradeoff between innovation, execution time and accuracy/quality. Each such winner will get $1000.

OpenCV Integration

To win $7500 to $9000 more, the chosen winning algorithms will need to be implemented in compliance with OpenCV requirements. OpenCV will contact the authors and reach agreement on schedules to provide the algorithm source code compliant with OpenCV. These authors will work with OpenCV towards including their algorithms in the OpenCV library under BSD license. OpenCV will specify the requirements for OpenCV compliant implementations of algorithms. Basic requirements:

- C++ language
- [OpenCV Coding Style Guide](#)
- [OpenCV How to contribute](#)

Important Dates

The submission period of the OpenCV Challenge starts in November 15th, 2014 and closes in May 15th 2015. Winners will be announced in June 8th 2015 at CVPR 2015.

Contact

Main challenge page:
http://code.opencv.org/projects/opencv/wiki/VisionChallenge

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