

RF_VIDEO TRACKER v2.3 VIDEO TRACKING SOFTWARE LIBRARY

The **RF_VIDEO_TRACKER** software library is intended for automatic tracking of objects in video and represents a set of source files for inclusion in C++ projects. On request, the library can be supplied in C language. It allows building both single- and multi-channel tracking systems, has high performance characteristics and is compatible with all types of processor systems. The use of the **RF_VIDEO_TRACKER** library will allow you to create your own effective vision systems for solving problems of fire control, weapon guidance and perimeter control with a significant reduction in development time.

FIELD OF APPLICATION

Smart sights, portable and stationary target acquisition systems, unmanned aerial vehicles, weapon stations, fire control systems, anti-aircraft complexes and homing heads.

HOSTING PLATFORMS AND COMPATIBILITY

The VIDEO_TRACKER software library can make use of any processor platforms as a hosting platform. The library has been developed in C++ language (C++98 standard) and uses an OpenMP 1.0 parallel computation standard. Compatibility is ensured with any C++ compilers that support the above standards. The software library can be used on such processors as x86, ARM, DSP (digital signal processors), etc.



WHAT'S NEW

- Calculation speed is increased by 5% compared to version 2.2.1;
- Minimum memory requirements (less than 128 KB of statically allocated memory);
- The code structure is simplified for more efficient optimization by compilers;
- Capability is added of using several alternate video sources for tracking calculation;
- The principle of changing the parameters of Algorithm 2.1 has been made simpler.

TESTS OF PERFORMANCE

1 tracking channel, object size 128x128 pixels.

Compiler / processor	Time / fps
VS2017x64 / intel i7-4720 (4 core)	1.5 mc / 660 fps
VS2017x64 / intel atom z8300 (4 core)	10.0 mc / 100 fps
TI C6000 / TI DSP C6678L (8 core)	15 mc / 66 fps
VS2017x64 / intel i5-7200U (2 core)	3 mc / 333 fps
VS2017x64 / intel atom e3950 (4 core)	6 mc / 166 fps

FEATURES AND CAPABILITIES



High operating speed. Automatic tracking of up to 700 frames per second with the object size of 128x128 pixels (for Intel Core i7 processors).



Possibility of building both single- and multi-channel systems. The library includes implementations in C and C++.



Tracking of objects with the size from 8x8 to 128x128. The option of changing the algorithm parameter setting in times of tracking.



Tracking of all types of objects of any shape. No tracking collapse if the object area changes up to 50% over no less than 50 frames.



Tracking when an occluder overlaps up to 50% of the object area. Tracking collapse detecting and the object is re-capturing.



Accuracy of the coordinates calculation is not less than 1/16 pixel. Object speed calculation of with an accuracy of not less than 1/16 pixels /frame.



Tracking of dynamic objects. Permissible displacements of the object of up to 52 pixels in one frame in any direction.



Tracking of low-contrast objects against a complex background. Tracking of objects with a contrast from 10%.



Calculation of the position and size of the object in the tracking rectangle. The capability of correction without resetting and re-capturing.



Stable tracking under a continuous changing of the object brightness up to 50% over 50 frames. Adaptation to a changing background.



Minimum memory requirements for the software library. No more than 128 KB is needed per tracking channel.



Capability of organizing the STOP-FRAME mode to help the operator in capturing fast moving objects for tracking.



Easy integration. The library does not require any configuration. It is supplied as a few source code files in C++.