

ACT File Format

ACT file is a kind of project file used by ACTS (<http://www.zjucvg.net/acts/acts.html>) and LS-ACTS (<http://www.zjucvg.net/ls-acts/ls-acts.html>). It contains a series of items, each of which is formatted as <Item 1> </Item 1>. So ACT file is highly extendable. You can freely add or remove an item, which does not influence the file parsing. In the following, we highlight the ACT file content with blue color, and the explanation words are with black color.

#camera track project file

It is a starting sentence for ACT file recognition.

<Image Sequence>

Sequence:.\00000.jpg

start:500

step:5

end:1800

</Image Sequence>

It specifies the sequence path, the starting and end frames.

<Motion Type>

FREE_MOVE

FOCAL_CONSTANT

PRINCIPAL_KNOWN

SKEW_KNOWN

</Motion Type>

The camera motion type can be FREE_MOVE or ROTATION_ONLY.

The focal length is known, constant or variable: FOCAL_KNOWN, FOCAL_CONSTANT, FOCAL_VARIABLE.

The principal point is known, constant or variable: PRINCIPAL_KNOWN, PRINCIPAL_CONSTANT, PRINCIPAL_VARIABLE.

The skew is known, constant or variable: SKEW_KNOWN, SKEW_CONSTANT, SKEW_VARIABLE

<intrinsic parameter>

1529.2162424 1529.2162424 479.5000000 269.5000000 0.0000000 1.0000000

</intrinsic parameter>

The intrinsic camera parameters: fx fy cx cy skew aspect ratio.

(fx, fy) are the focal lengths in X and Y directions. (cx, cy) is the principal point.

<Feature Tracks>

kpts: 64 //the dimension of the feature descriptor

36412 //the number of feature tracks

...

5 -1 -1 0.0000000 0.0000000 23.3798120 //the number of 2D image positions, the flag (0 is valid, -1 is invalid) and status (-1 indicates outlier) of feature track. (0.0000000 0.0000000 23.3798120) is the 3D position.

115 915.00000 515.00000 116 921.46246 513.77307 117 928.03180 512.30164 118
927.15186 511.34637 119 931.92798 510.90396 //the 2D image positions: (915.00000
515.00000) in frame 115, (921.46246 513.77307) in frame 116.

...

<Feature Tracks>

<Match Link>

Min Track Length: 25

</Match Link>

Set the minimum track length

<Camera Track>

<FRAME0>

1221.227077

1.0000000000 -0.0000000000 0.0000000000 -0.0000000000

-0.0000000000 1.0000000000 0.0000000000 -0.0000000000

0.0000000000 0.0000000000 1.0000000000 0.0000000000

0.0000000000 0.0000000000 0.0000000000 1.0000000000

</FRAME0>

...

</Camera Track>

The first line is focal length, and the remaining 4*4 matrix is the projection matrix of each frame.