1
00:00:00,030 --> 00:00:01,918
So something I'm asked a lot regarding

2
00:00:01,919 --> 00:00:04,588
the gimbal video is: if it's just a glare,

3
00:00:04,589 --> 00:00:07,798
if it's just some kind of glare in the

4
00:00:07,799 --> 00:00:11,159
camera, then how can the glare rotate

5
00:00:11,160 --> 00:00:13,649
when the horizon doesn't rotate? How can

6
00:00:13,650 --> 00:00:15,868
the glare rotate independently of the

7
00:00:15,869 --> 00:00:19,169
horizon? Now it's actually not that

8
00:00:19,170 --> 00:00:22,617
complicated. Now the way the camera is

9
00:00:22,618 --> 00:00:25,617
mounted it has to rotate when it goes

10
00:00:25,618 --> 00:00:27,928
over zero degrees, when it's going over

11
00:00:27,929 --> 00:00:29,488
the forward-facing direction, just

12
00:00:29,489 --> 00:00:30,628
because of the way it's mounted, because

13
00:00:30,629 --> 00:00:33,328

of the gimbal system, This is an unwanted

14
00:00:33,329 --> 00:00:36,807
rotation. So what they do is they have a

15
00:00:36,808 --> 00:00:38,968
thing called a derotation mechanism

16
00:00:38,969 --> 00:00:42,688
that levels out of the rotation to make

17
00:00:42,689 --> 00:00:44,368
it so that the horizon is the way it

18
00:00:44,369 --> 00:00:46,199
should be, which is level to the actual

19
00:00:46,200 --> 00:00:49,169
horizon as seen by the pilot. So this

20
00:00:49,170 --> 00:00:51,807
derotation mechanism is applied after the

21
00:00:51,808 --> 00:00:53,728
actual rotation of the camera to remove

22
00:00:53,729 --> 00:00:55,828
the unwanted rotation so let's see what

23
00:00:55,829 --> 00:00:57,868
that looks like if we have this little

24
00:00:57,869 --> 00:01:01,019
camera here and we rotate it and say

25
00:01:01,020 --> 00:01:03,178
that's an unwanted rotation and we want

26
00:01:03,179 --> 00:01:05,818
to remove this unwanted rotation. We just

27
00:01:05,819 --> 00:01:08,669
apply a derotation to it. In this case I

28
00:01:08,670 --> 00:01:12,089
just used a motion tracker to remove, to

29
00:01:12,090 --> 00:01:14,249
track the motion and remove the rotation.

30
00:01:14,250 --> 00:01:17,098
So we've derotated it here, which gives

31
00:01:17,099 --> 00:01:20,727
the horizon, my garage door here, remains

32
00:01:20,728 --> 00:01:23,669
steady and the glare itself rotates

33
00:01:23,670 --> 00:01:26,309
because the glare is a function of a

34
00:01:26,310 --> 00:01:29,068
part of the camera and if we are

35
00:01:29,069 --> 00:01:32,488
rotating the camera the glare rotates

36
00:01:32,489 --> 00:01:35,068
relative to the horizon. And so if we

37
00:01:35,069 --> 00:01:36,958
then apply this derotation to get the

38
00:01:36,959 --> 00:01:39,477

horizon steady the horizon doesn't

39
00:01:39,478 --> 00:01:42,779
rotate and the glare does rotate. So that

40
00:01:42,780 --> 00:01:44,339
explains what's going on in the gimbal

41
00:01:44,340 --> 00:01:48,059
UFO video the glare is rotating because

42
00:01:48,060 --> 00:01:51,298
the camera is rotating. The horizon isn't

43
00:01:51,299 --> 00:01:53,429
rotating because they don't want it to

44
00:01:53,430 --> 00:01:55,977
rotate. The rotation is unwanted, a

45
00:01:55,978 --> 00:01:58,589
function of the gimbal system the

46
00:01:58,590 --> 00:02:00,867
derotation rotates the glare and that's