



1
00:00:00,086 --> 00:00:02,066
The rig here is an
imaging correlation rig.

2
00:00:02,526 --> 00:00:05,216
What it does is it uses
a pair of stereo cameras.

3
00:00:05,216 --> 00:00:08,896
So two cameras, looking at the
same point, that are calibrated

4
00:00:09,146 --> 00:00:11,426
such that we can take
images of the lab

5
00:00:11,736 --> 00:00:13,956
and generate 3D images
and 3D measurements.

6
00:00:14,376 --> 00:00:16,716
What we use this for
specifically is we look

7
00:00:16,716 --> 00:00:19,456
at measurements of
how the vehicle moves

8
00:00:19,816 --> 00:00:21,496
when it drives across a slope.

9
00:00:21,966 --> 00:00:24,166
We also look at how
the soil moves

10
00:00:24,166 --> 00:00:27,056
and so we can track each
individual little slope,

11

00:00:27,146 --> 00:00:29,336

little eddy in the
surface of the soil.

12

00:00:29,636 --> 00:00:32,016

In order to make
the system work,

13

00:00:32,016 --> 00:00:33,976

we have to have the
cameras synchronized.

14

00:00:34,336 --> 00:00:37,916

So what I did is, I took a
very simple, very low cost,

15

00:00:37,916 --> 00:00:41,486

micro-controller that was
able to send the signal

16

00:00:41,826 --> 00:00:43,156
to trigger the cameras.

17

00:00:43,456 --> 00:00:46,296

And with that we were able
to take multiple images

18

00:00:46,556 --> 00:00:48,186

at exactly two seconds apart.

19

00:00:48,376 --> 00:00:51,796

This allowed us to do some
special movement tracking

20

00:00:51,796 --> 00:00:52,336

of the vehicle.

21

00:00:52,536 --> 00:00:54,406

To measure speeds
more accurately

22

00:00:54,536 --> 00:00:58,316
and to also take thousands
of images without a engineer

23

00:00:58,316 --> 00:00:59,956
or researcher having to
click the button each time.

24

00:01:00,336 --> 00:01:01,936
I started working with
Habitat for Humanity

25

00:01:01,936 --> 00:01:03,076
when I was 11 years old.

26

00:01:03,386 --> 00:01:05,876
My first project was
down in West Virginia.

27

00:01:06,276 --> 00:01:08,556
We went down there and we
built a straw bale house.

28

00:01:08,676 --> 00:01:10,106
From there on I was hooked.

29

00:01:10,106 --> 00:01:12,326
I wanted to do Habitat and
do these building projects.

30

00:01:12,366 --> 00:01:14,966
So I've been going every
year for almost 20 years now.

31

00:01:15,426 --> 00:01:20,656
Those values have really created
a sense of, "I can make anything

32

00:01:20,656 --> 00:01:22,406

that I want with
what's available."

33

00:01:22,636 --> 00:01:25,546

So that's really taken
through to my career

34

00:01:25,546 --> 00:01:27,696

where I have been able
to see what's around me

35

00:01:27,696 --> 00:01:29,976

and put things together,
for very useful purposes.