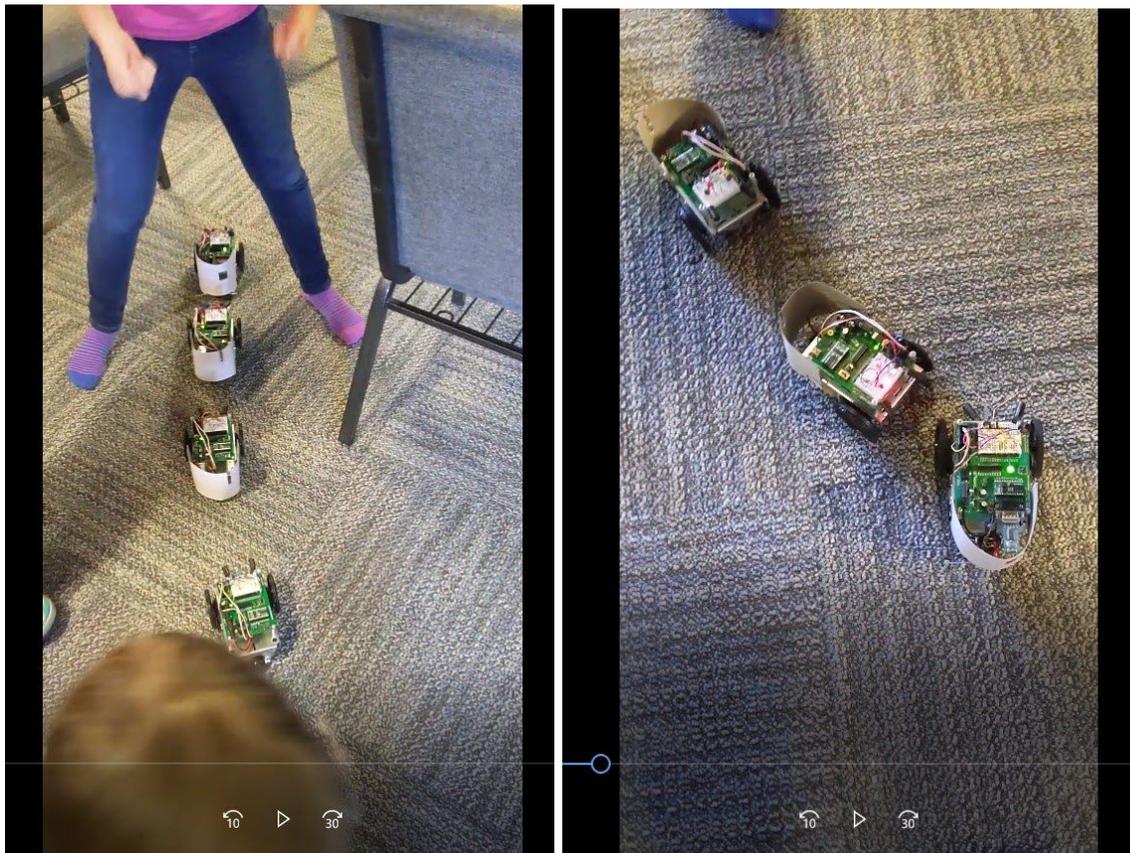


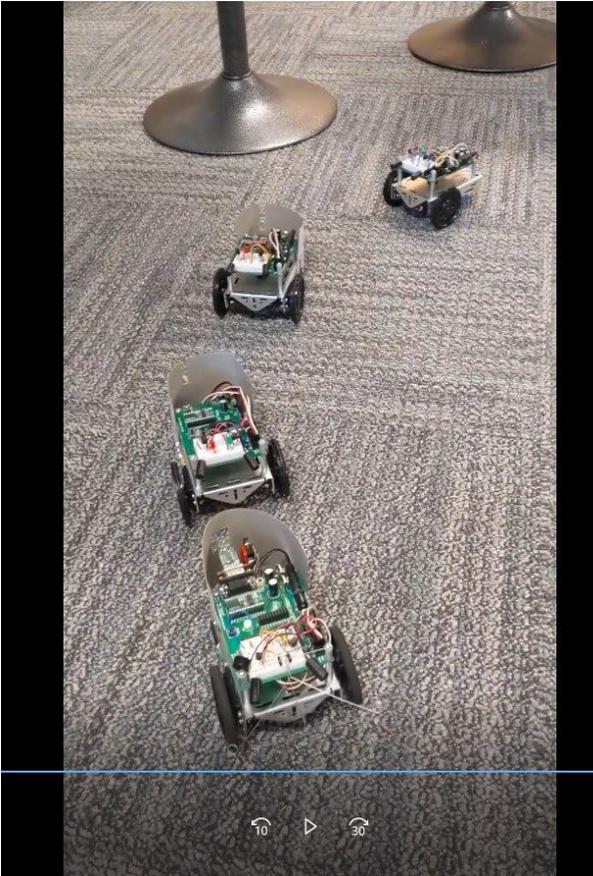
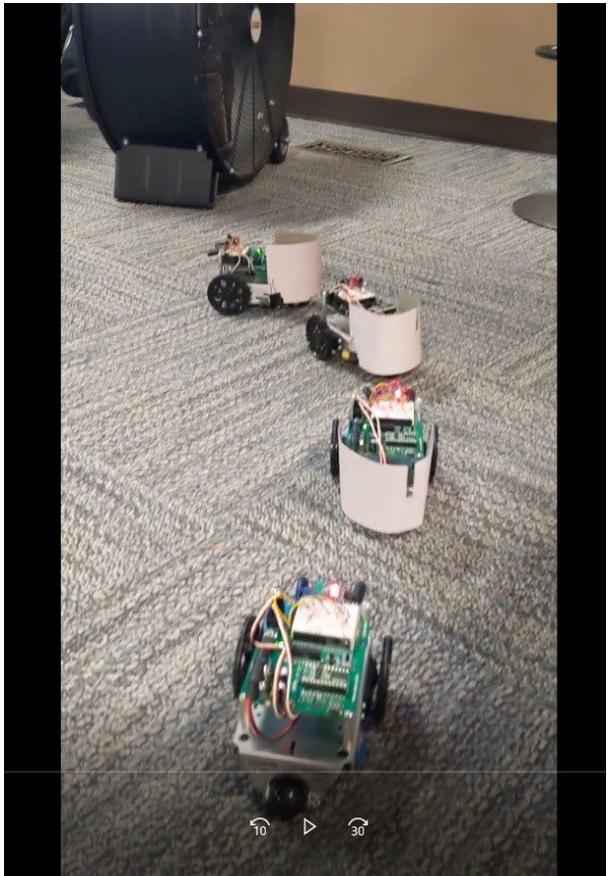
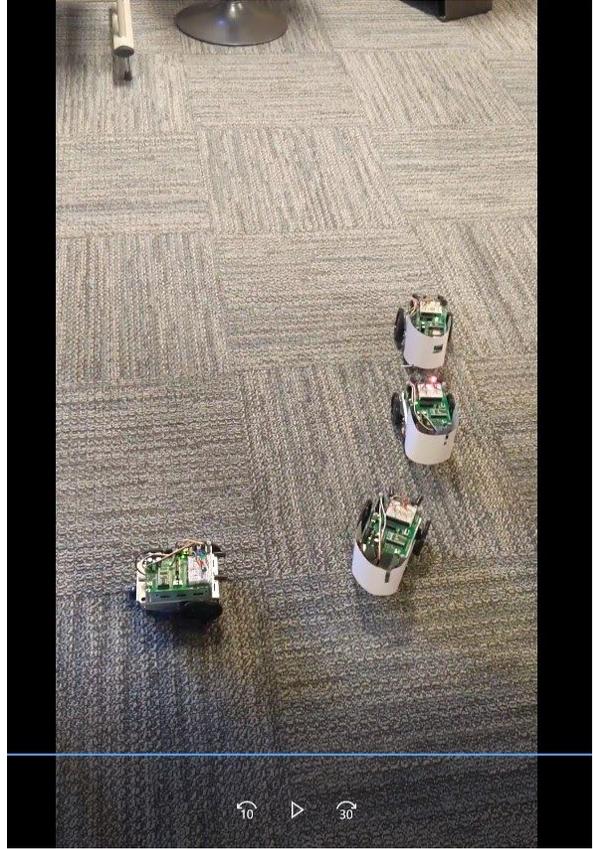
The meeting kicked off around 10AM. About 25 folks attended.

Shared usual meeting slides.

Richard G. talked about virtual attendance of [CES2021](#). It was a rather disappointing experience compared to being there in person.

Steve talked about the robot classes he has been doing. Robots are programmed to follow the leader. The lead robot is programmed to steer around obstacles. It also keeps track of how long it's been going straight ahead and randomly turns left or right after a while. The followers are programmed to steer toward a target such as the skirt on the back of the robot in front of it. They use a PID controller algorithm to compute servo control values in order to keep themselves pointed towards the target. This is an example of "swarm robotics". Each robot only knows what's happening in front of itself, nothing else. The behavior is particularly interesting when something unusual happens like the Leader making a sharp turn. The followers had to stop moving forward until the Leader got a little ways away. The followers handled this very well.





[Jitsi.org - develop and deploy full-featured video conferencing](#)

<https://www.youtube.com/watch?v=leX541Dr2rU>

[Swarm Lab \(theswarmlab.com\)](#)

Lane Departure Warning System

https://www.amazon.com/AZDOME-Departure-Warning-Streaming-G-Sensor/dp/B07JNHWQDC/ref=sr_1_4?dchild=1&keywords=lane+departure+warning&qid=1610826045&s=electronics&sr=1-4

[11:43 AM] Nathan Kohagen (Guest)

MicroVision and Pioneer developed a heads up display almost a decade ago. It was a very expensive add-on to an already expensive infotainment system.

[11:50 AM] Robert (Guest)

AI is going to take away jobs as well.

https://www.amazon.com/gp/video/detail/B079H2LHR1/ref=atv_dp_share_cu_r

New RISC-V CPU claims recordbreaking performance per watt

[New RISC-V CPU claims recordbreaking performance per watt | Ars Technica](#)

[Autonomous Robots & Smart Factories | NVIDIA Jetson](#)

[12:01 PM] Nathan Kohagen (Guest)

There are faster switching transistors than Silicon CMOS (NMOS/PMOS). There is SiGe and GaN devices and for that matter superconducting Josephson Junctions. We keep using CMOS because it is cheaper.

Fastbrick Robotics Automates Masonry

<https://www.youtube.com/watch?v=ODsIsBu25m8>

[12:03 PM] Robert (Guest)

How robotic arms are transforming farming and academic research

[12:03 PM] Robert (Guest)

<https://www.youtube.com/watch?v=-bX4wBhiO68>

[12:06 PM] Robert (Guest)

One thing Bill Nye is forgetting is not every person has the capability mentally to do the advanced jobs. Where does this blue collar class go?

[12:06 PM] Robert (Guest)

Not everyone can be a Computer Engineer

[12:07 PM] James, Terry

True but there will be a lot of peripheral jobs, such as techs for maintain and repairing the robots.

[12:07 PM] Robert (Guest)

Not everyone has the skills to be techs.

[12:07 PM] Robert (Guest)

Or the mental capacity to gain those skills.

[12:07 PM] James, Terry

Our society is growing more complex and we will have to grow our skills upwards.

[12:08 PM] Robert (Guest)

We will have to leave some people behind.

[12:09 PM] James, Terry

I believe there will still be applications like personal assistants where those with reduced capacity can still be employed, but we must look for creative ways to integrate them into our future.

[The Last One \(software\) - Wikipedia](#)

[Rust Programming Language \(rust-lang.org\)](#)

[Will AI Replace Programmers? - YouTube](#)

[12:28 PM] James, Terry

<https://www.youtube.com/watch?v=j4r0TT6ax0I>

[12:28 PM] James, Terry

Yes but more and more learning is available for free online.

[12:29 PM] James, Terry

Universities may become outmoded by speed of learning required.

[12:29 PM] Robert (Guest)

Not everyone can learn.

[12:29 PM] James, Terry

But you are right that these challenges need to be addressed.

12:29 PM] Nathan Kohagen (Guest)

At some point if people can't afford schooling and government doesn't pay for it, if companies can't hire enough educated people then companies will need to pay for the training.

[12:30 PM] Robert (Guest)

But some people just don't have the capacity to learn even if it was free for them.

[12:30 PM] James, Terry

If we free up more people perhaps we could create more jobs for people to assist more of the people with cognitive limitations.

[12:31 PM] James, Terry

This is a large challenge and many difficulties will have to be addressed.

[12:31 PM] Nathan Kohagen (Guest)

AI can only diagnose so much - at some point we need thinking people to debug outlier situations

[12:33 PM] James, Terry

Oh, yes, for now.

[12:33 PM] Robert (Guest)

<https://goforward.com/how-it-works>

How a Forward Membership WorksForward is a primary care membership that takes your healthcare to a new level: unlimited doctor visits, genetic and medical testing, heart screening, and more.goforward.com

[12:33 PM] Nathan Kohagen (Guest)

We send what are extremely intelligent mechanics into space to change batteries for experiments because so many things can go wrong that we can't predict and we need people there to resolve.

[12:34 PM] Robert (Guest)

Still don't know how non-scholars are going to find jobs. Low skilled people are going to go on welfare.

[12:35 PM] Robert (Guest)

And skilled people are going to be paid less.

[12:36 PM] Robert (Guest)

So everything is going to shift down economically. Middle class will become poor and lower class will permanently be placed outside of the workforce.

[12:36 PM] Nathan Kohagen (Guest)

We will need robot mechanics to repair them? Along the same lines as auto mechanics.

[12:36 PM] Robert (Guest)

How many though?

[12:36 PM] Robert (Guest)

How much would they be paid?

[12:37 PM] Robert (Guest)

Robots might not take away OUR jobs but they will take away low class jobs.

[12:38 PM] Robert (Guest)

Robotics will decrease OUR incomes. For the same our more education effort.

[12:38 PM] James, Terry

Yes, but we can join the fight to make sure that low wage positions are available somewhere.

[12:38 PM] Robert (Guest)
What positions?

[12:39 PM] Robert (Guest)
If Robotics can do food service? Or Janitorial service?

[12:39 PM] Nathan Kohagen (Guest)
I agree that robots will take jobs. Maybe this is going to lead to shorter work weeks for all and more leisure time. From what I understand people worked twice as during the industrial revolution time frame.

[12:39 PM] James, Terry
I am saying that they will be new, we have to create them and use our collective creativity to provide for our fellow human beings.

[12:48 PM] Nathan Kohagen (Guest)
and hopefully benefiting from the own work

[12:50 PM] Robert (Guest)
No need for Actors even now.

[12:51 PM] Robert (Guest)
Inventor, Scientist, Artists - not everyone has those skills or the ability to develop them.

[12:52 PM] Robert (Guest)
OpenAI GPT-3. Look at that.

[12:53 PM] Nathan Kohagen (Guest)
maybe teachers and mentors will become even more important

[12:53 PM] Nathan Kohagen (Guest)
teachers will help people scale their talents more

[12:53 PM] Robert (Guest)
The people who do the repetitive tasks aren't the same type of people as those who innovate. The type of people who can innovate don't do repetitive tasks even more.

[12:54 PM] James, Terry
Yes, but this has happened in the past and people retrained and adopted new skills, but we need to support this movement nationally.

[12:54 PM] Nathan Kohagen (Guest)
maybe it just takes the right teacher or mentor for people to find the things that they are passionate about that they haven't yet discovered

[12:54 PM] Nathan Kohagen (Guest)
I know this is the reality we presently live in, but I'm trying to be optimistic here where we work together for us to all succeed.

[12:55 PM] Robert (Guest)

One video course can replace thousands of teachers.

[12:56 PM] Nathan Kohagen (Guest)

<https://robothon.org/jan-16-2021-virtual-mini-sumo-contest-event/>

Jan. 16, 2021 Virtual Mini-Sumo Contest Event Teams event link. Click to join the meeting

Virtual Robothon Feedback

- Do rumble by starting each robot off the ring and then placing them on the ring after they're started. They will be introduced sequentially but since this is unofficial, the results don't matter. This will allow them all to roam and push as each new robot is added..
- Place robots by having competitors call out clock hours (12 to 11).
- How feasible are multiple cameras?
-