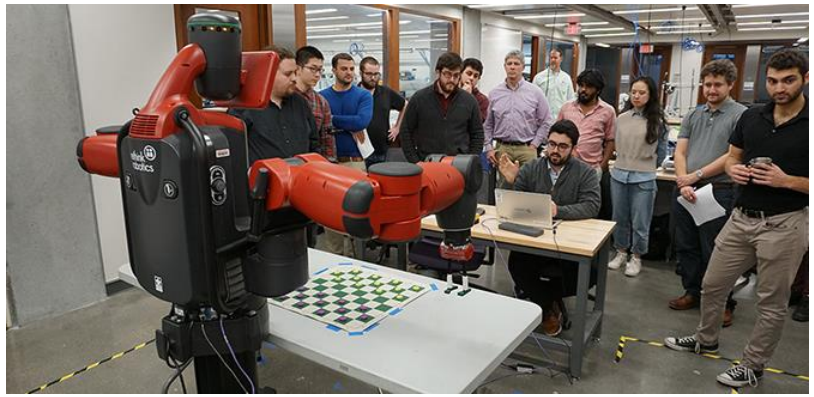
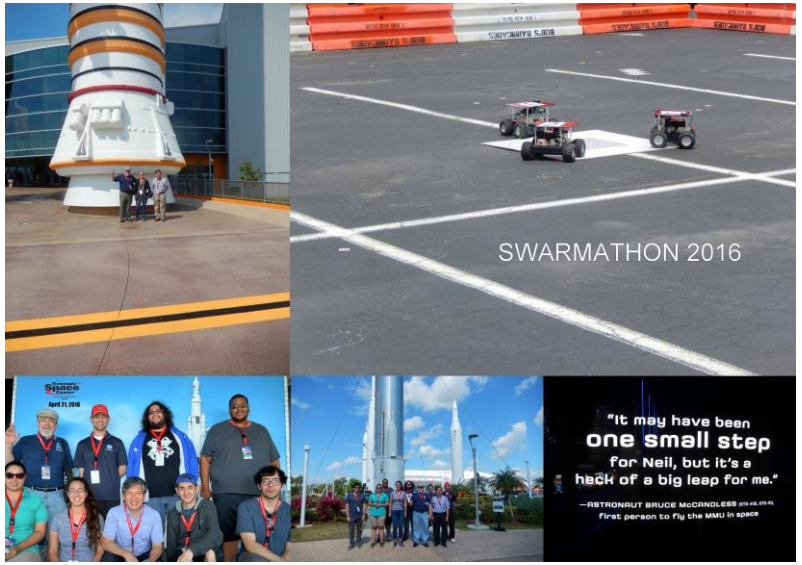
ROS ROBOTS AT WORK

AND PLAY





Miguel and Waffle

The Robot Operating System (ROS) is a set of software libraries and tools that help you build robot applications. From drivers to state-of-the-art algorithms, and with powerful developer tools, ROS has what you need for your next robotics project. And it's all open source.

ROS is relied upon throughout the robotics industry. It’s the norm for teaching robotics. It’s the basis for most robotics research, from single-student projects to multi-institution collaborations and large-scale competitions. And it’s inside robots that are running in production all around the world today. In the autonomous mobile robot (AMR) alone, ROS has helped to create billions of dollars in value.

https://www.ros.org/

BeerBots: Cooperative Beer Delivery Robots

TURTLEBOT WAITERS

BeerBots: Cooperative Beer Delivery Robots

MIT CSAIL

Massachusetts Institute of Technology 3:12 Video

Watch the Video:

https://www.csail.mit.edu/node/6019

http://projects.csail.mit.edu/video/research/robo/beerbots.mp4

This uses the Willow Garage PR2 (Personal Robot) and several Turtlebots.

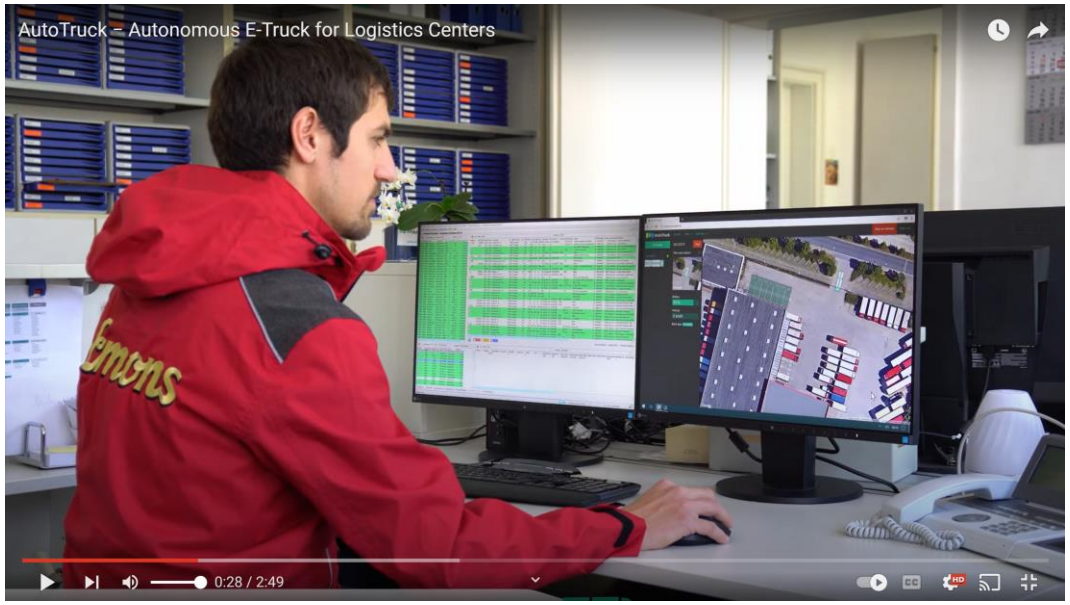
Notice the April Tags to orient the robots when placing the orders.

AutoTruck − Autonomous E-Truck for Logistics Centers

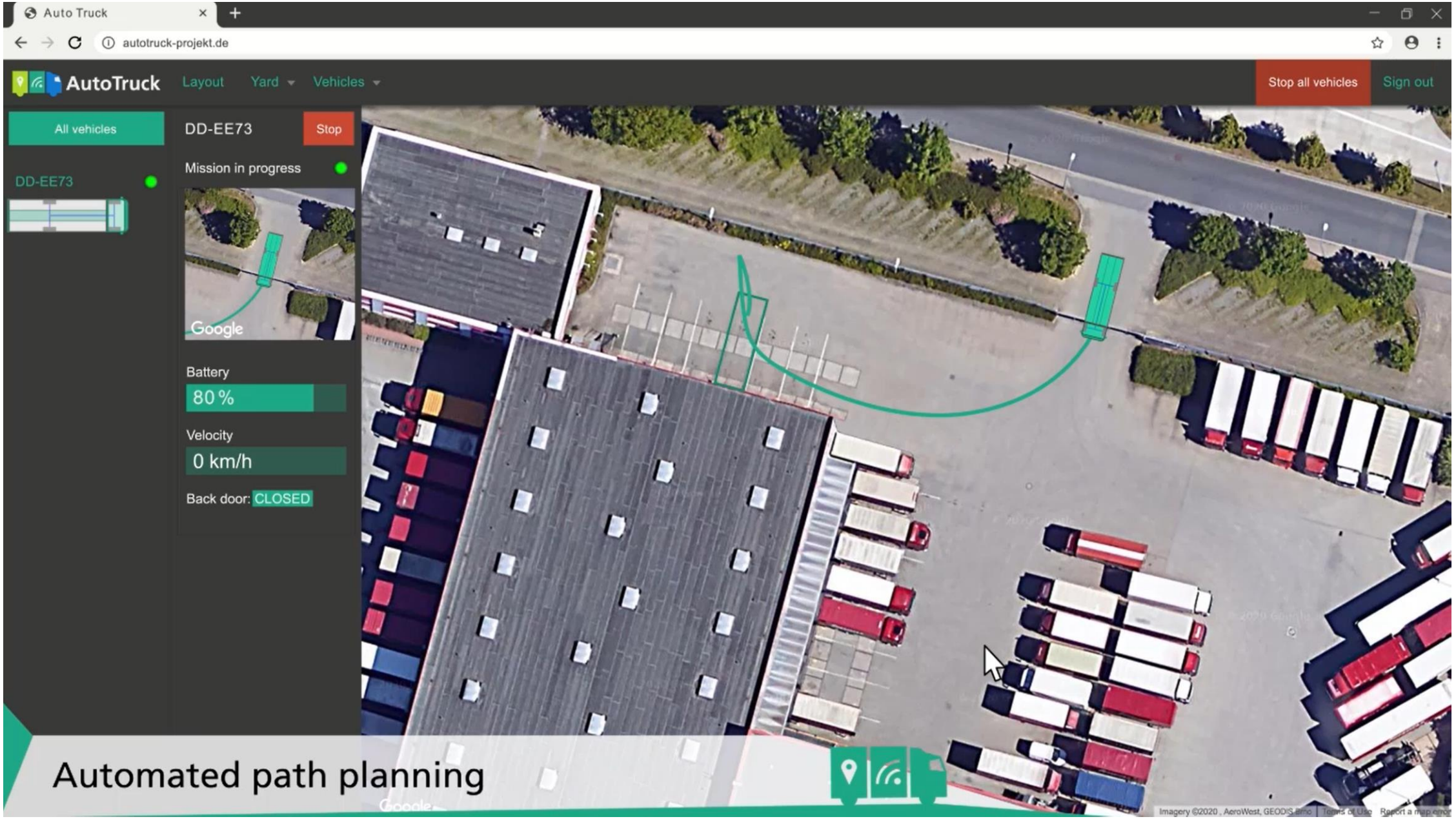
https://www.youtube.com/watch?v=1g86sH44y50&t=69s

2:49

DRIVER SAYS GOODBYE TO TRUCK



OPERATOR PICKS LOCATION FOR TRUCK


Auto Truck
autotruck-projekt.de
AutoTruck
Layout
Yard
Vehicles
Stop all vehicles
Sign out
All vehicles
DD-EE73
Stop
DD-EE73
Mission in progress
Google
Battery
80 %
Velocity
0 km/h
Back door: CLOSED
Automated path planning
Google
Imagery ©2020 , AeroWest, GEODIS Brno

Fraunhofer IVI: AutoTruck – Autonomous Electric Truck for Logistics Centers powered by ROS and helyOS

The AutoTruck brings autonomous driving to logistics centers for enhanced efficiency and safety with core vehicle automation powered by ROS. Missions can be planned, assigned, executed and monitored using the helyOS automation framework. The helyOS Control Tower features generic interfaces for application-specific trajectory planners and GUIs while the helyOS Automation Layer enables fast and simple commissioning of robots using ROS – from commercial vehicles to agricultural robots. Our vision: automate what's automation-ready within minutes.

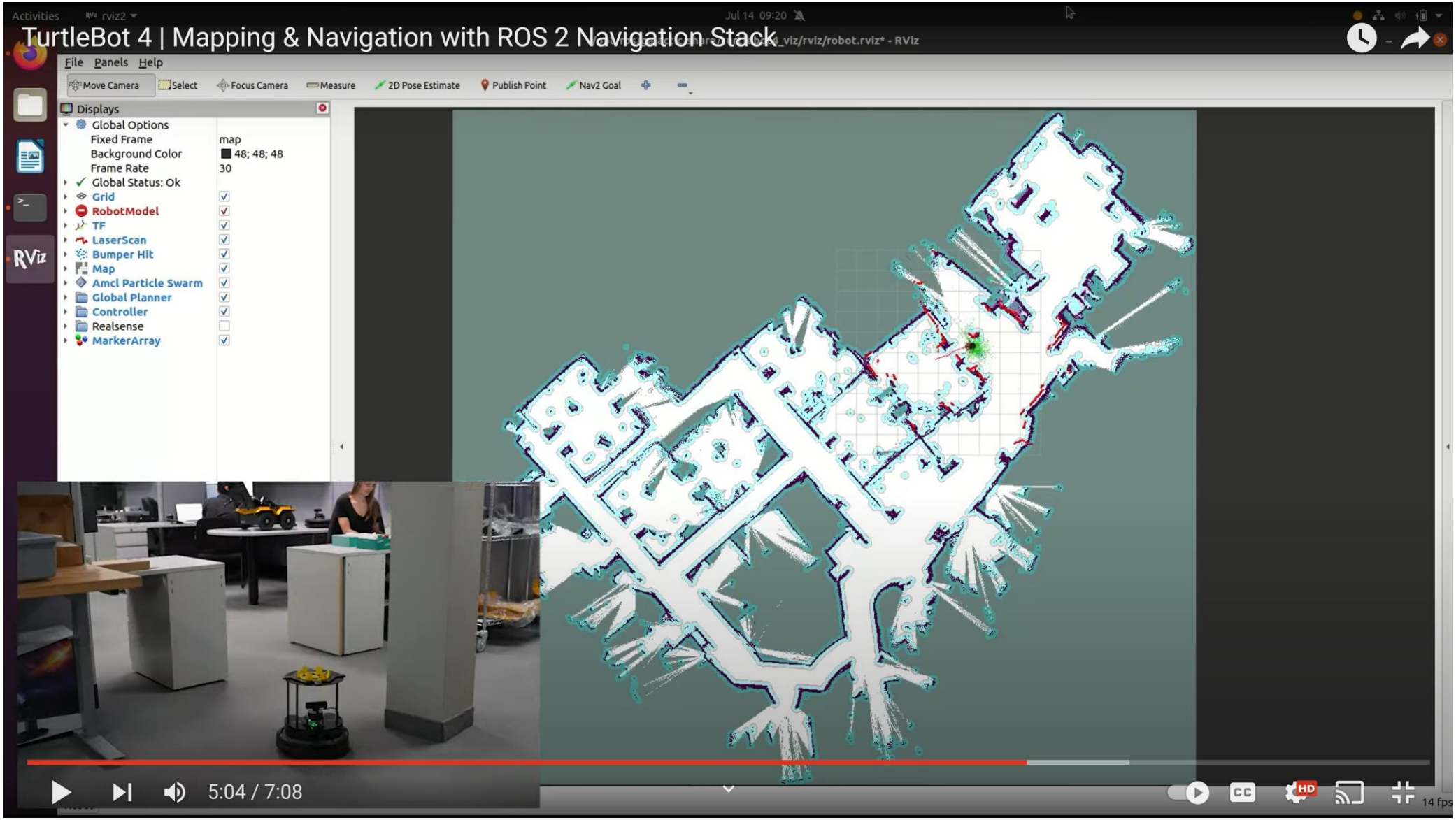
https://rosindustrial.org/rosindustrial-video-competition-2020

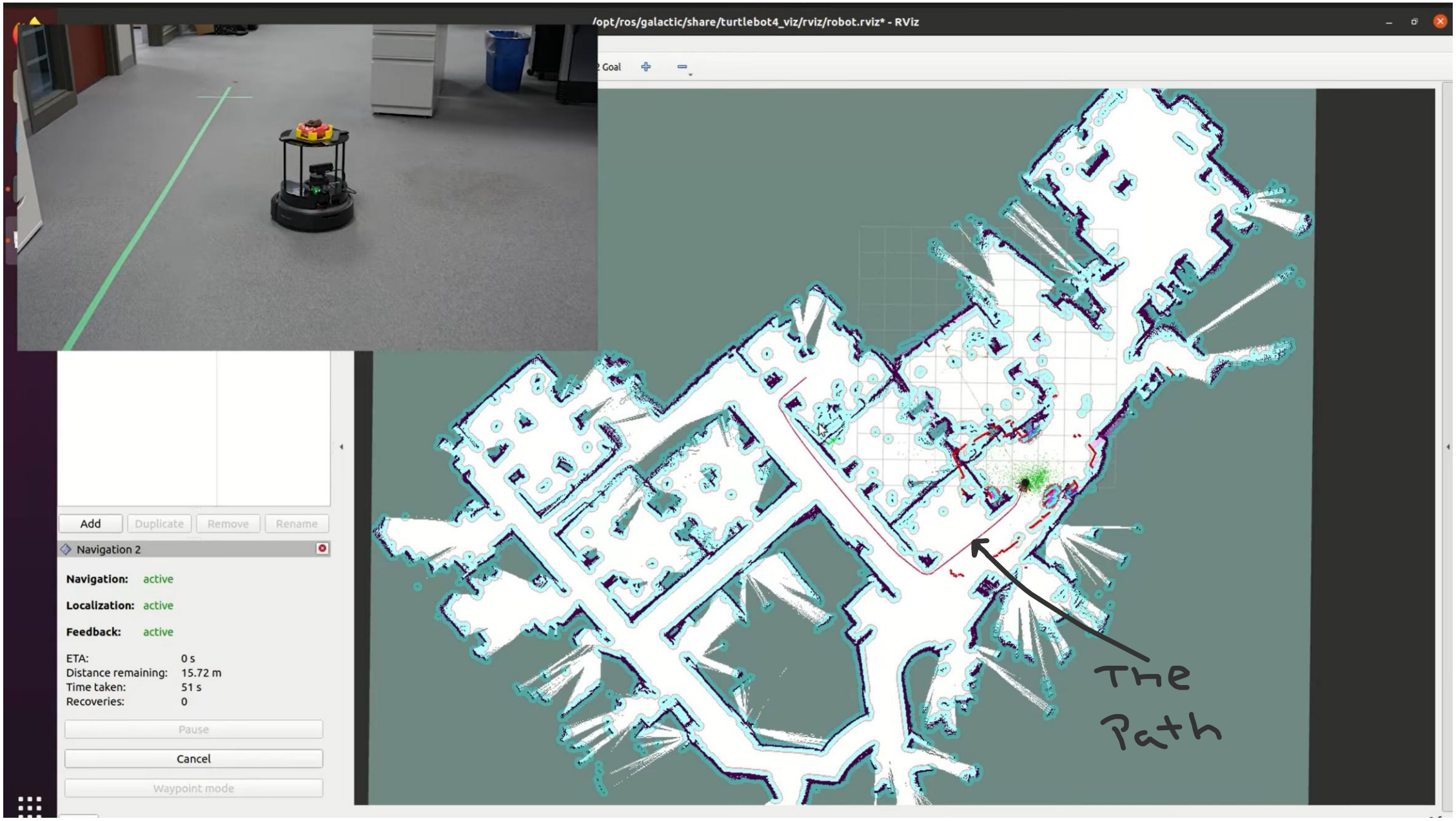
TurtleBot 4 | Mapping & Navigation with ROS 2 Navigation Stack

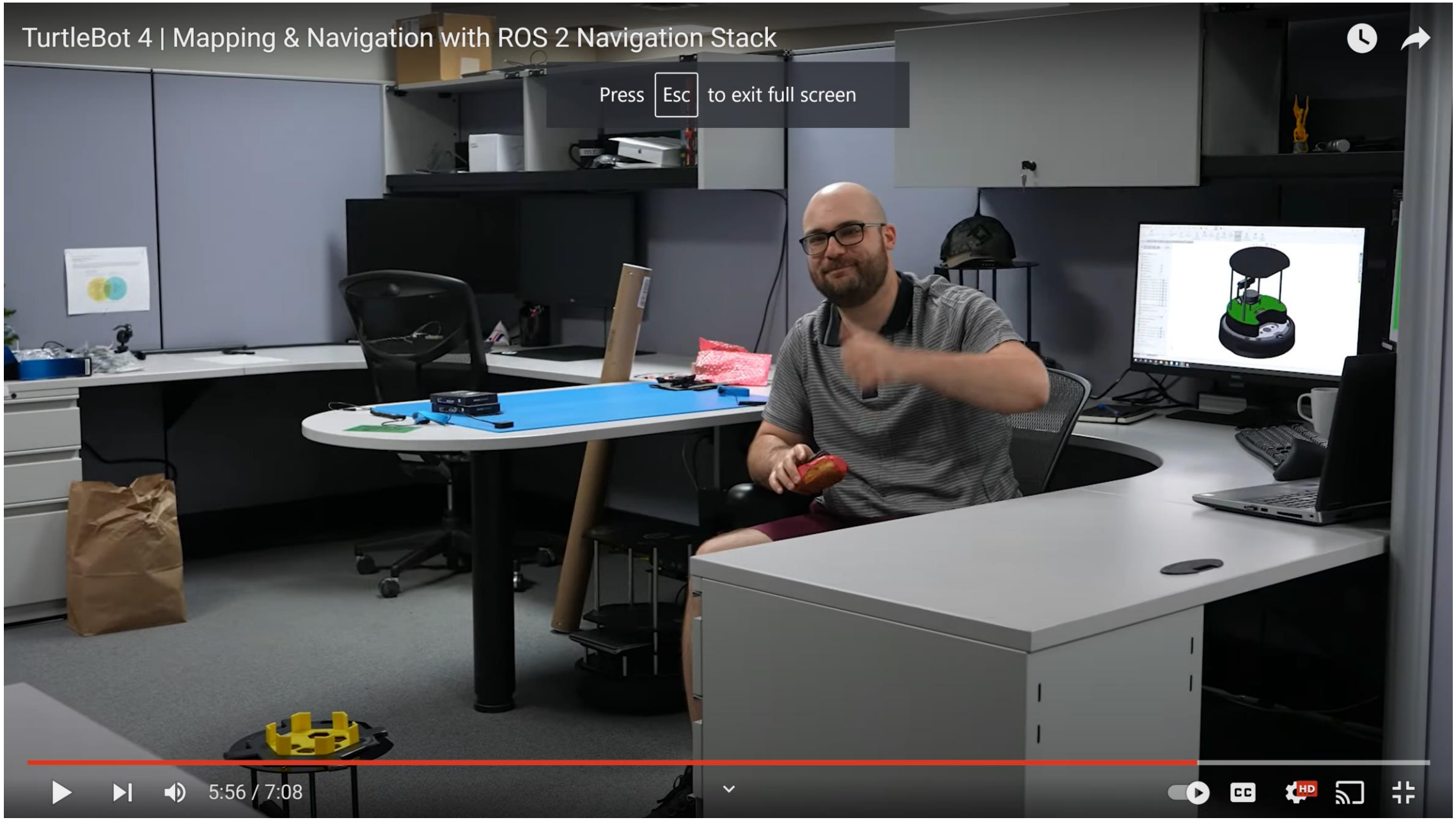
https://www.youtube.com/watch?v=T3if0aPj0Eo 7:08

NEED A DOUGHNUT?

MAKE A MAP OF THE OFFICE

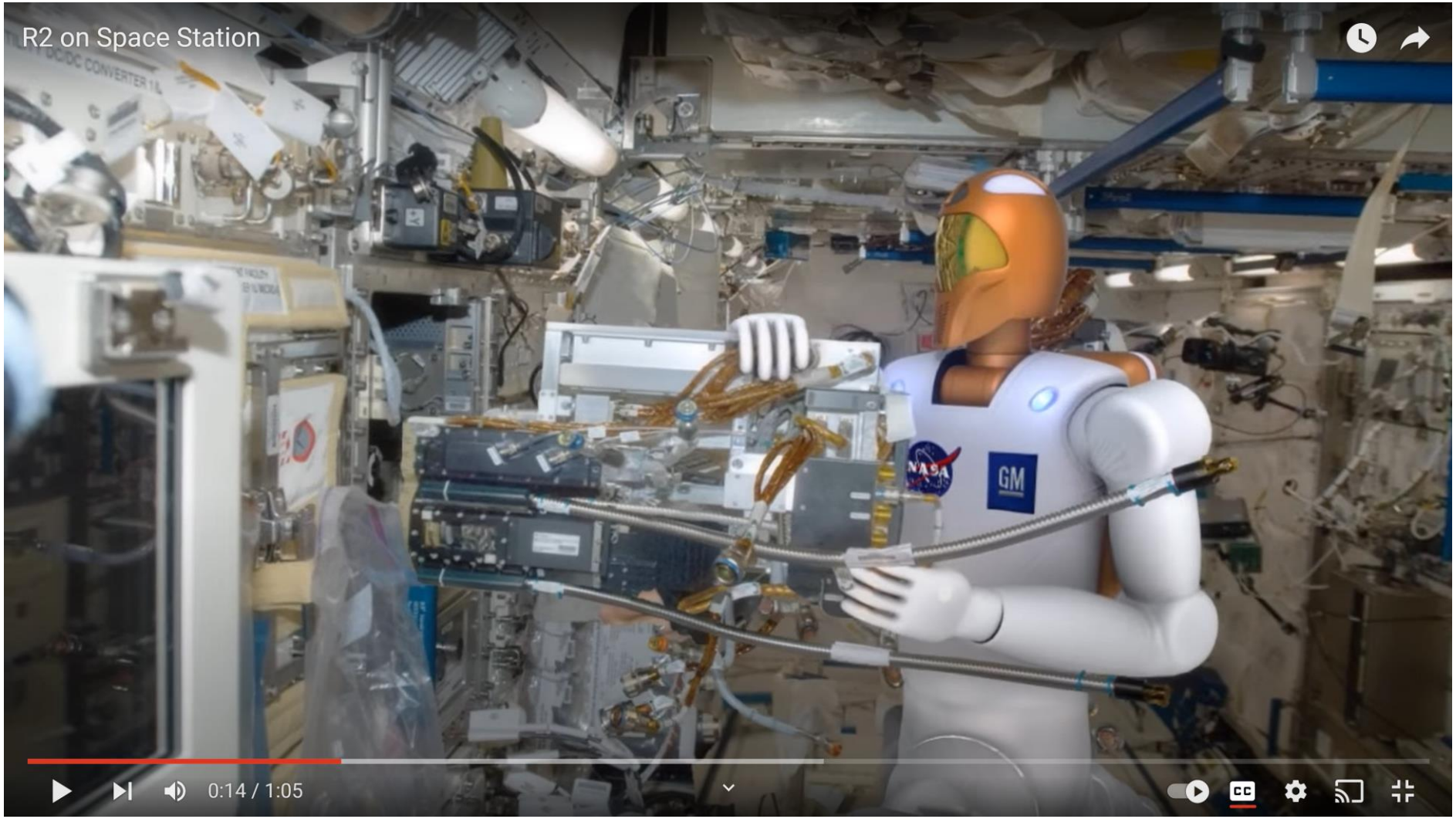



/opt/ros/galactic/share/turtlebot4_viz/rviz/robot.rviz* - RViz
Goal
Add
Duplicate
Remove
Rename
Navigation 2
Navigation: active
Localization: active
Feedback: active
ETA: 0 s
Distance remaining: 15.72 m
Time taken: 51 s
Recoveries: 0
Pause
Cancel
Waypoint mode
The Path


TurtleBot 4 | Mapping & Navigation with ROS 2 Navigation Stack
Press Esc to exit full screen
5:56 / 7:08

R2 on Space Station 11,621 views Aug 12, 2013 1:05

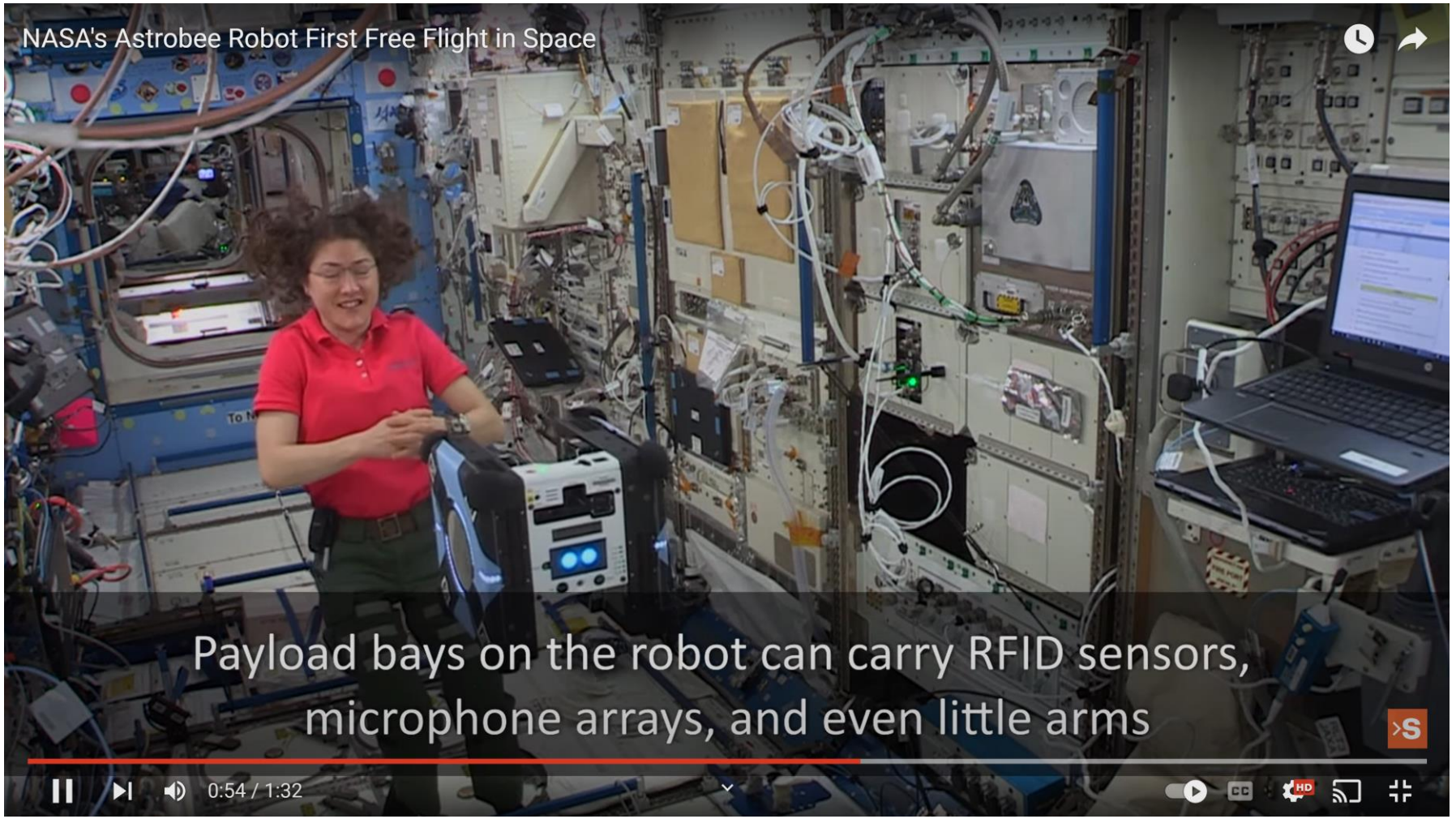
https://www.youtube.com/watch?v=_5My7CmbrJw&t=23s



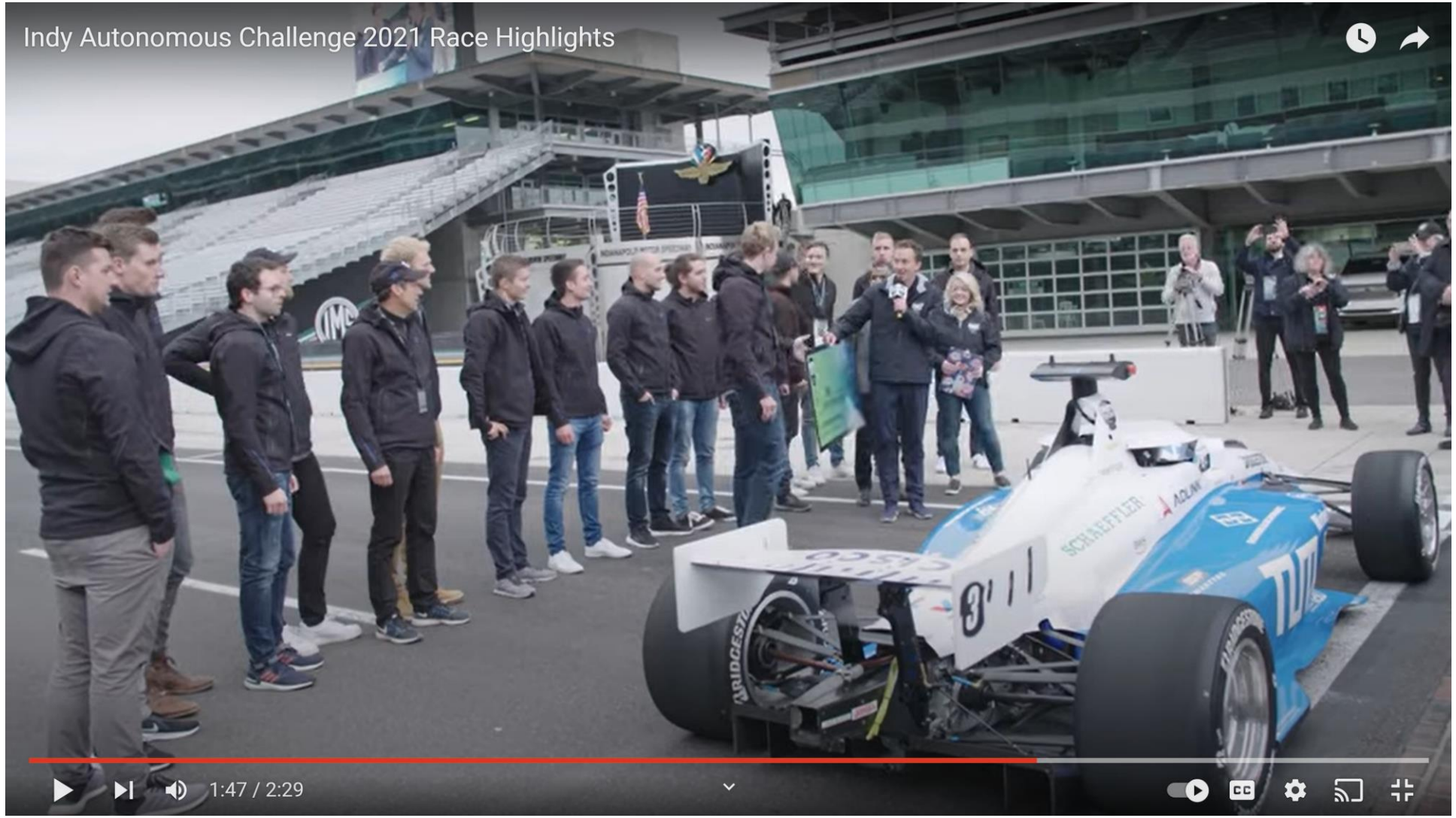
NASA's Astrobee Robot First Free Flight in Space

https://www.youtube.com/watch?v=hk-1j3sXTqA

47,049 views Oct 10, 2019 1:32



Indy Autonomous Challenge 2021 Race Highlights 2,817 views Nov 16, 2021



https://www.youtube.com/watch?v=wjB768a4Hjw

https://www.therobotreport.com/12-memorable-robotics-moments-of-2021/

Autonomous racecars zooming around the Indianapolis Motor Speedway at nearly 140 MPH? Count me in. TUM Autonomous Motorsport from the Technische Universität München won the Indy Autonomous Challenge (IAC) and **discussed it on *The Robot Report Podcast***. It recorded the fastest 2-lap average speed of 135.944 MPH.

All of the cars shared the exact same chassis, engine and body design. The cars all shared the same autonomous driving technology, including LiDAR, RADAR, vision cameras, IMS and GPS sensor package. At the heart of the vehicles were top of the line Cisco routers (for routing all of the signals on-board) and an ADLINK Technologies AVA edge AI autonomous racing computer.

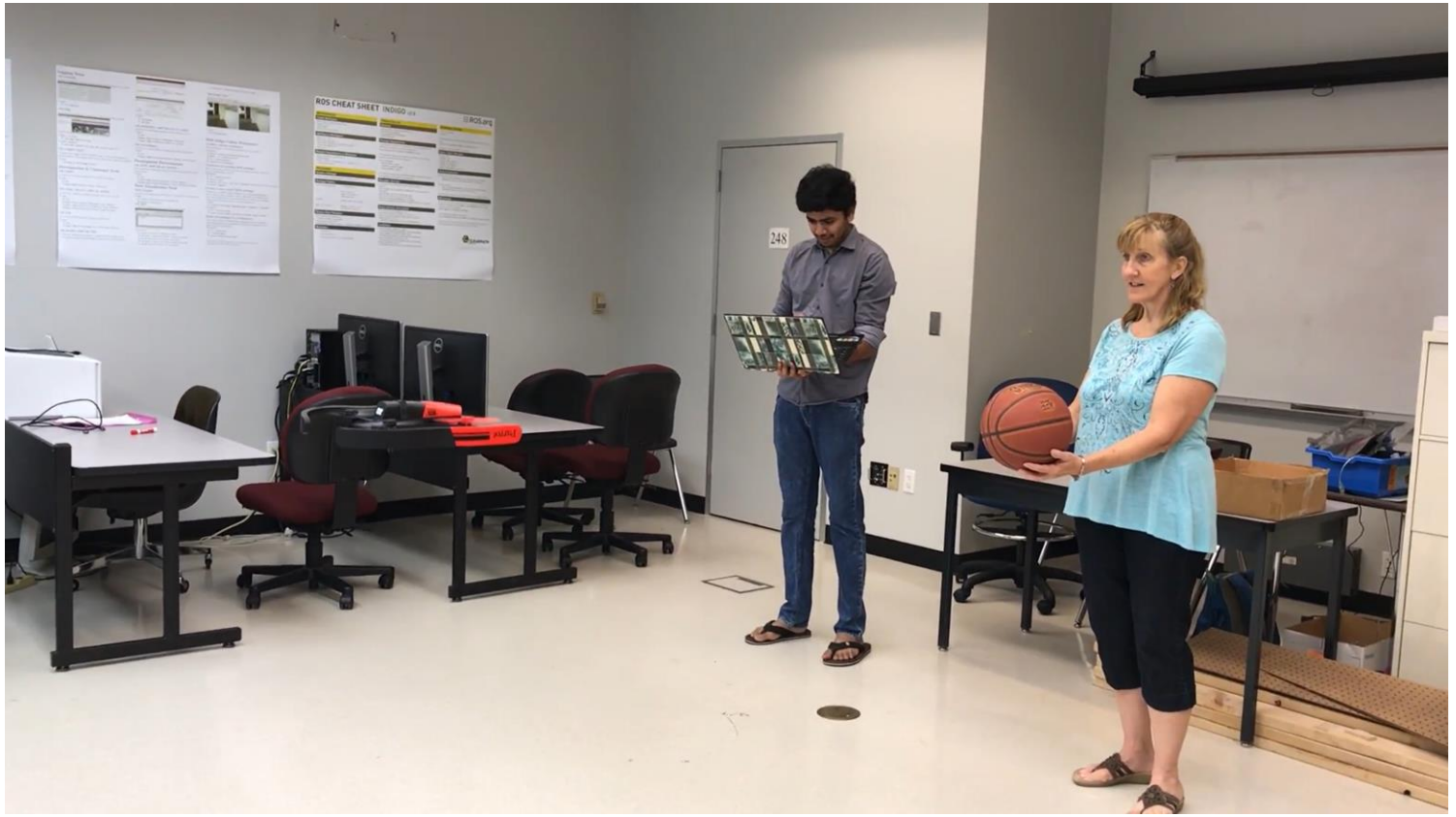
The cars all shared a similar software stack built on top of the Robot Operating System (ROS).

The most difficult problem was designing the racing algorithms that allowed the sensor fusion and input processing to be done in real-time while the car was moving at high speeds.

https://www.youtube.com/watch?v=uWT1Z53nSVE

FOLLOW THAT BALL!

https://www.youtube.com/watch?v=Ab3wtKs72sM



Bharadwaj Attluru has developed a ROS program that will control Bebop's flight using an object (like a basketball). The control algorithm keeps the object within the center of Bebop's camera image. This program uses OpenCV and Python.