

CU Hyperloop Takes Home the Accuracy Award at the 2023 Not-a-Boring Competition!

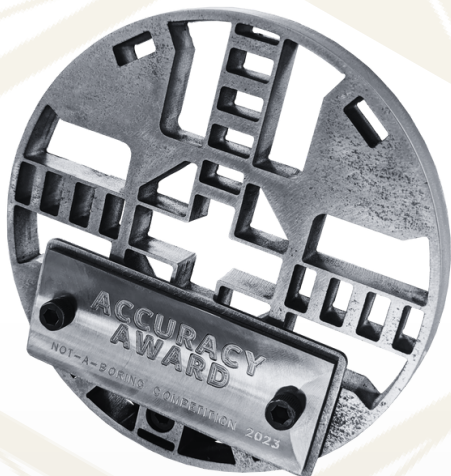
Kicking off Spring Break with a 4am departure from Boulder, CO, the CU Hyperloop team immediately faced challenges on the drive to the 2023 Not-a-Boring Competition held near Austin, TX. With cylinder misfires, blown tires, and busted tail lights, we had to be quick on our feet from the moment we left our workshop.

By lunchtime on Opening Day, we became the first team to pass our generator power safety checks and work began in full force. Data cables and gripper seals were in by Tuesday, power harnesses by Wednesday, and the machine was fully sealed by Friday with all shell pieces and cutting teeth attached and only a handful of remaining machine checks required to start digging!

With the team integrating in the field for the first time ever, there were bound to be setbacks. While many were able to be fixed, a failure during testing of one of our grippers on Saturday prevented us from fully powering on and digging a tunnel. However, we still had one last trick up our sleeves.

Throughout the entire year, CU Hyperloop made a point to ensure we understood our systems, designs, and algorithms. As part of this, we wrote numerous custom simulations and evaluation scripts for all aspects of the machine. This enabled us to still demonstrate our guidance, navigation, and controls subsystems despite not being able to dig. These demonstrations led to us being awarded the Accuracy Award for exceptional guidance, navigation, and controls systems on board the tunnel boring machine. Our iterative guidance method and Unscented Kalman Filter demonstrated that a fully autonomous machine was achievable, cementing our team in 3rd place worldwide and as the only US-based team to earn an award.

Aside from the engineering, we had a fantastic time meeting team members from around the world and learning about their unique machines. It was also great to have the chance to talk with engineers from The Boring Company and team sponsors from ANSYS, Global Machinery, and Rad Rocket. We look forward to further validating and improving our machine with tests in Colorado in the near future and competing again in the next Not-a-Boring Competition!





Tire blowout outside of Amarillo, TX

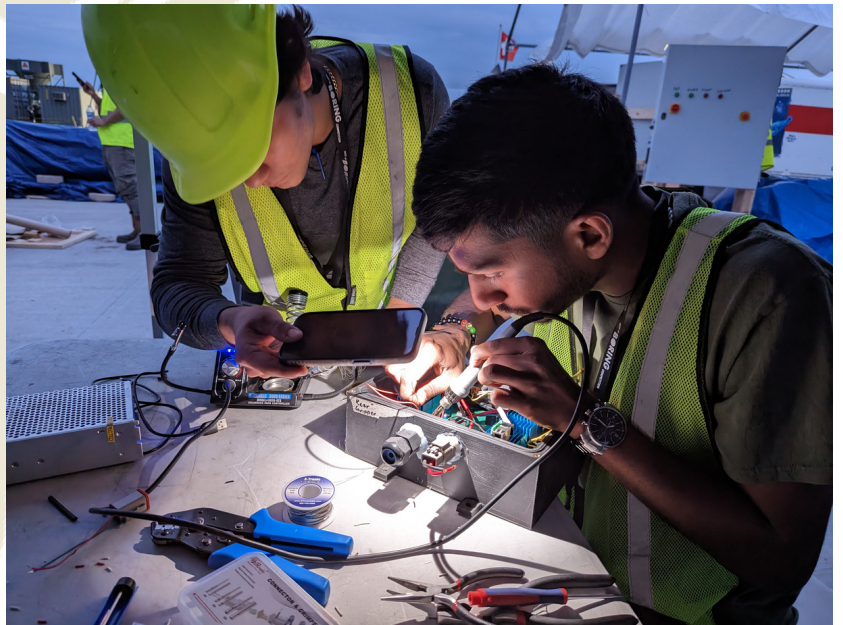


The team preparing the soil removal hose near the launch area



Arjun welding some modified gripper structures to the machine on-site

Some evening soldering from Alex with light from Ben on the team's rear gripper board



Our workshop for the week



Cole and Shancheng performing some last-minute checks on the hexapod propulsion board

Mateo and Ben grinding the cutting wheel after learning our outer cutting teeth would not arrive in time



Arjun going through some mechanical safety calculations with a Boring Company engineer



Ferin less than thrilled with some intern hexapod test results...

The machine being transported to the launch area



The 2023 Not-a-Boring Competition CU Hyperloop Team