



Robotic self-driving cart has 2 cameras in front and one on back. Once it has learned a route, it can repeat it.

Robotic Cart Learns On-The-Go

Burro the autonomous cart will not only follow you around, it will also learn and repeat common tasks.

"The Burro can learn routes and re-run them exactly," says Charlie Andersen, Augean Robotics. "Most other systems use GPS with RTK base stations, which are expensive, but the only way to get millimeter accuracy. We use a lower cost alternative."

The Burro uses computer vision and deep learning. This enables it to navigate safely inside a building, such as a warehouse, as well as under a thick canopy of vegetation.

When activated and told to follow a person, 2 cameras in front and one on the rear of the Burro identify not only the person, but also the surroundings as it follows. The combination of sensors and machine learning algorithms lock it onto its human, maintaining a set distance behind him and stopping when he does.

The current design is a 26-in. high, 2-WD, 26 by 48-in. chassis that can carry 300 lbs. The 4-WD option can carry 450 lbs. With a top speed of 5 mph, its 2 lead-acid batteries give it a range of about 4 hrs. or 15 to 20 miles.

Initial uses of the Burro include travelling up and down vineyard, orchard and berry rows. Once it has learned a route, it can repeat it, picking up or delivering containers to pickers as it goes.

Augean has tested it with a number of growers and in different situations, including some of the largest fruit and nursery operations. Andersen's family's 100-acre fruit and vegetable farm in Pennsylvania has been the firm's testing grounds.



The Burro's top speed is 5 mph.

"The Burro's top speed is 5 mph," notes Andersen. "It also is not moving around crowded streets. We feel safety is quite adequate for the environment we are in."

Each path requires only a couple of gigabytes of storage in the on-board computer, depending on how complicated the path is. The current edition of the Burro has about a terabyte of storage available. That may have to increase as the Burro takes on more complicated tasks.

"The more it runs, the more sophisticated it becomes," says Andersen. "We have started with a manageable, useful and economical platform. The only question from here is what do our customers want? It may be spraying, spot spraying, mowing, sweeping or more."

Andersen expects to have the Burro available for sale by mid 2019 with a price between \$10,000 and \$11,500. As production increases, that cost is expected to go down. In the meantime, a pilot program will be placing Burros with interested growers at a per-day rate.

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Before and after photos show how well Ruen's water treatment worked to clean up rusty tools.

Clean Up Rusty Tools With Water

By Jim Ruen, Contributing Editor

I had some old tools turn rusty while stored in a barn basement, so I dropped them in a tub of water. A few days later I fished them out and scrubbed off the rust using a steel brush under running water. When they dried off, there was some light rust remaining in the pitted metal, but I wiped them down with a light coat of oil, and they were rust free.

A couple years ago, I found some old rollers for a sliding barn door. They had been buried in dirt under a collapsing building, likely for years. I rinsed them off, but they

were frozen solid with rust. I gave them the water treatment, and a few days later the rollers were freed up and ran as smooth as new.

If you've got a problem with rust, try plain water before spending hours with a wire wheel, sander or rust removal chemicals.

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Vintage Clutches Replaced Or Rebuilt

If you can't find a clutch for that old car, truck or tractor, check with Kentucky Clutch. Owner Chris Harmon stocks hundreds of vintage clutches. If he doesn't have the clutch you need, he'll rebuild yours.

"We have the parts," says Harmon. "Just send us your clutch and we'll rebuild it."

Kentucky Clutch has been around for more than 30 years, long enough that some of today's vintage clutches were simply older at the time.

"We had parts from the 1950's and 1960's that 20 years ago we thought we would never sell," says Harmon. "For some reason we held on to them, and now we're getting tons of business for them."

Harmon thinks some of the increased interest from owners of the old vehicles is simply that the OEM's have stopped carrying the parts. Whatever the reason, Harmon is ready to meet vintage vehicle owners' needs. When the original owner retired, Harmon, an 18-year employee, and his wife Natosha took over. However, he isn't the only one with clutch experience.

"We have 6 clutch rebuilders with more than 15 years experience," says Harmon. "If you need a clutch, even if you don't know the manufacturer, give us a call."

In addition to vintage cars, Harmon carries clutches for nearly 90 different models of tractors and specialized equipment. The list includes classics like CO-OP and Oliver, as well as Challenger and Yanmar. It also includes skid steer makes and specialty equipment like Tree Farmer, Timberjack and even the Romanian built UTB Universal.

"We carry clutch kits for almost every make, model and application," says Harmon.



Kentucky Clutch owner Chris Harmon says that if he doesn't have the clutch you need for an old car, truck or tractor, he'll rebuild yours.

"We can rebuild your existing unit or replace it with a new or refurbished clutch kit from our stock."

In the rare case that he doesn't have a replacement clutch kit, he says his staff can rebuild a core within 24 hrs. The one key to doing business with Kentucky Clutch is to send the old core back when receiving a clutch kit.

"Never dispose of or scrap your vintage clutch," says Harmon. "They don't make this stuff anymore."

Contact: FARM SHOW Followup, KY Clutch and Performance, 250 Gun Club Rd., Brooks, Ky. 40109 (ph 502 955-9173; www.kyclutch.com).

His "Stableizer" Caught On Worldwide

Since it was first covered in Farm Show (Vol. 23, No. 2), more than 100,000 horses around the world have learned to relax with Buck Wheeler's Stableizer. Wheeler recently returned from Europe where he introduced his device to trainers in Ireland, Belgium and England, including Clive Brittain, horse trainer for Queen Elizabeth. It is even being used on camels in the United Arab Emirates.

"The Stableizer works on 3 acupressure points, 2 near the ears and one under the lip," says Wheeler. "Slip it on an excitable horse, and in a few minutes the eyes soften and the bottom lip starts drooping down."

The pressure points behind the ears release endorphins, natural narcotic-like substances that calm and relax the horse. Over stimulation of the pressure point beneath the upper lip blocks the release of adrenalin, further relaxing the horse.

Wheeler grew up on the Standing Rock Reservation in North Dakota and based the Stableizer on the Indian war bridle. In the 20 years since it was first introduced, it has been used on 2 Kentucky Derby winners, Belmont winners and racing quarter horses. A U.S. Army veteran, Wheeler is especially proud of the halter's use with horses pulling caissons for funerals at Arlington National Cemetery. However, everyday horses are a big market for the Stableizer, including former racehorses being retrained for use on buggies and other equipment.

Wheeler developed the Stableizer to replace the use of the twitch, commonly used to subdue horses. "The Stableizer is set up so the horse can function while wearing it," says Wheeler. "You can train with it on, which you can't do with a twitch."

Wheeler notes that horses with the Stableizer in place associate otherwise



Stableizer is a humane training tool that combines an Indian war bridle with acupressure to calm and relax your horse.

negative experiences, like hoof trimming and clipping, as pleasant and enjoyable. Even years later, he says, he can step into a pen with a horse he has introduced to the Stableizer, and they will come to him, thanks to the pleasure they associate with him.

Wheeler offers 5 sizes for everything from llamas and mini-horses to 2,000-lb. and larger draft horses. The Stableizer is priced at \$64.95 regardless of size.

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