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iRacing takes a meticulous approach to recreating vehicles, but real replication remains just out of reach.



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By Eric Tegler Nov 7, 2016

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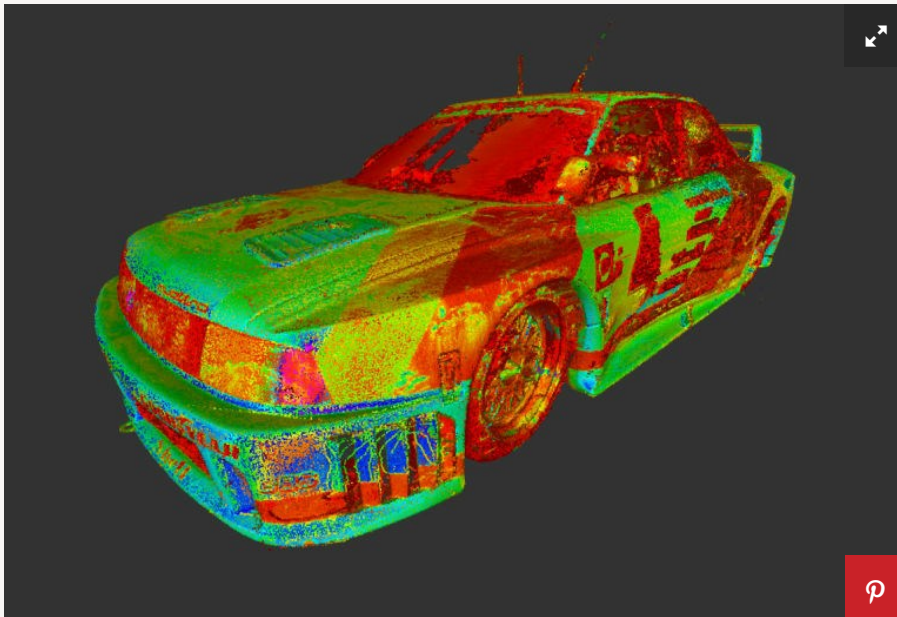
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Simulated racers are a diehard group of gamers who thirst for meticulously crafted digital recreations of high horsepower autos. And the pole-sitter for making these "machines" is iRacing. The twelve-year-old company was among the first to use laser scanners to replicate a racetrack inch-by-inch, delivering a level of detail earning the title of a simulation, or "sim," rather than a more run-of-the mill video game like Forza Motorsport or Gran Turismo.

And much like its racetracks, iRacing also uses three-dimensional laser scanning to build its fleet of digital cars, which its more than 60,000 subscribers use to compete online. Even professional NASCAR racers, like Joey Logano and Brad Keselowski, have used these cars to prep for upcoming racetracks, and iRacing recently extended its partnership with Skip Barber Racing School, one of the largest racing schools in the world. It's *the* super-accurate sim for the pros. And now iRacing is making its next four-wheeled

creation.

In October, iRacing announced a partnership with Ferrari to create a sim of the Ferrari 488 GTE sports racing car. While iRacing's developers hope to make the 488 GTE simulation as realistic as possible, there are some unavoidable barriers when aiming for absolute replication.



Preliminary digital scan of an Audi 90 Quattro

iRacing

The real-world 488 GTE races around the world against cars built by BMW, Chevrolet, Porsche, Aston Martin, and Ford. If a simulation offered too much insight on the 488, the digital car could be mined for intelligence by other teams. In other words, iRacing is *too* good at recreating racing machines.

"Gathering good information for car models can be difficult," says iRacing vehicle dynamics engineer Chris Lerch. "Both manufacturers and teams invest heavily in things we ask for that provide a competitive advantage on the race track, leading to a natural hesitancy to share this information with us."

"FOR US, THE ONLY PRIORITY IS FOR THE SIM TO REFLECT REALITY."



To build an accurate racing sim, the first step is gathering the information needed to create the car model. Lerch says they'll work with Ferrari to gather relevant information about the design of the 488 GTE, including CAD files. Then iRacing begins building a blueprint of the car.

"This is the numerical recipe of just the information our sim requires," Lerch confirms. "We'll perform supporting analysis for things like masses and inertias and aerodynamic performance."

Some specific design details are entered directly into the model, things like brake system parameters, caliper piston diameters, and rotor sizes. Once the car is designed, iRacing then looks at how racing teams adjust the 488 GTE

for specific tracks, conditions, and driver preferences.



Getty + Brian Cleary

If possible, iRacing developers will work with 488 GTE drivers during development to ensure that what they produce digitally transmits the effective performance and "feel" of the real car. Though iRacing doesn't receive information from tire makers (in this case, Michelin), it does its best to understand and represent the tires used by real teams.

But a simulation will never fully replicate reality, particularly a gaming simulation limited by IP concerns. But Lerch says that doesn't mean they'll stop trying.

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"For us, the only priority is for the sim to reflect reality," he says, "a very specific slice of reality."

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