In blink of an eye, robot sets new Rubik’s cube Guinness World Record

If you want to become the fastest human to ever solve a Rubik’s cube, you need to beat the 3.13 second Guinness World Record set by Max Park in June 2023. Unfortunately, you’ll need superhuman speed to outsolve the newly crowned fastest Rubik’s cube-solving robot. Earlier this month, a bot designed by Mitsubishi Electric engineers solved the iconic 3×3 block puzzle in the literal blink of an eye. At 0.305 seconds, the TOKUI Fast Accurate Synchronized Motion Testing Robot (TOKUFASTbot) was so blisteringly quick that even the cube itself had difficulty keeping up with the machine.  
  
  
  
  
  
  
  
  
  
According to Mitsubishi’s recent announcement, TOKUFASTbot shaved off 0.075 seconds from the previous Guinness titleholder on May 7 during its record attempt in Hyogo, Japan. Accomplishing the feat required combining compact, high-power, signal-responsive servomotors with a color-recognition algorithm developed in-house in order to complete each 90-degree rotation in just 0.009 seconds. For reference, that’s roughly as fast as a single flap from a hummingbird’s wing.  
But moving quickly is useless if a robot can’t do it accurately. Even the slightest misalignment will slow things down or risk jamming the toy, so every Rubik’s cube rotation must be precise enough to allow for each subsequent twist and turn. To ensure this, Mitsubishi engineers integrated motion-control technology already used in the company’s manufacturing processes. While normally employed to accurately position wiring within winding equipment during motor coil production, this programming provided TOKUFASTbot the means to make sure each millisecond maneuver was as precise as it was fast.  
[Related: Check out the world’s biggest freestanding Rubik’s cube.]  
Meanwhile, a newly developed AI algorithm program was trained to accurately recognize and match colors, even if block positions or the robot’s own shadow obscured its camera system. Mitsubishi notes this was particularly difficult to achieve for the red and orange blocks, given their similar hues. Once identified, the program near-instantaneously calculated the shortest number of moves needed to match block colors.  
“Shaving off time as much as possible was difficult, but it was fun at the same time. I never had issues with motivation through the project,” TOKUFASTbot’s team leader told Guinness.  
It wasn’t always smooth puzzle-solving, however, as Guinness reports the team’s first attempt was foiled by accidentally jamming their Rubik’s cube at such high speeds. Even so, the second attempt proved much more rewarding and claimed the world record. The new top speed is a massive improvement on previous Rubik’s cube robots—in 2009, for example, the record was one minute and four seconds. But that’s already faster than any human, it wouldn’t be until 2016 that a robot completed the puzzle in under a minute. At this point, it sounds like it’s now not so much a question of how fast these robots can go, but how much strain a Rubik’s cube can withstand.