



# ONE GOOD TURN

Senior Zack Gromko's amazing robot solved the Rubik's cube in world-record time

By David Glaser

It was a scene usually reserved for sports heroes or rock stars, but there sat Zack Gromko, seemingly as perplexed by it as he was appreciative of the attention. Just seconds earlier, a gymnasium full of students and faculty erupted in cheers and rose to their feet to celebrate his accomplishment. He gratefully accepted hugs, handshakes and high fives, still unsure what all of the hubbub was about.

Photo by Thomas Bender/Sarasota Herald-Tribune

The robot Zack had worked eight months to construct at home did what it was designed to do – solve with incredible precision a puzzling toy that was a must-have for every kid raised in the 1980s. With Zack's device cradling it like some sort of overprotective aluminum spider, the Rubik's cube's colorful sides aligned so quickly that it was difficult to comprehend. One stopwatch read 2.39 seconds. A second recorded 2.41. Either measure was fast enough to break a Guinness World Record set at 3.253 seconds in England in March 2014 by something called the CubeStormer 3.

Zack's robot has no such flashy name and is as unassuming as its creator. The modest senior with a startling intellect and an uncommon love for mathematics built it – along with some guidance from his grandfather – out of scrap aluminum, some relatively inexpensive motors and plenty of brain power.

The project presented a perfect blend of Zack's interests in computers, math, engineering and problem-solving.

"I started cubing in sixth grade and was inspired by a friend who'd bring his cube to school and draw huge crowds," he said. "I taught myself how to solve it one weekend, but was quite slow actually, so people would lose interest pretty quickly. Then about two years ago I saw a video of the world record robot and I noticed a couple of strange things."

What Zack recognized was that device featured just four arms and one camera to scan the cube and apply the solution. By



to his intellectual pursuits. An improved diet and rigorous commitment to running and weight training changed his physical appearance. Involvement in leadership roles in school clubs, and as a member of several academic and athletic teams helped Zack continue to blossom socially.

"It really has been amazing how he's developed," said Chi Klein, Upper School Academic Dean and Zack's faculty advisor. "When I first met him, Zack was quite intense and focused – barely smiled, even when he was asking profound questions in his areas of interest. Now, you see a goal-oriented and confident young

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– Upper School Academic Dean Chi Klein

constructing his robot with arms on all six sides and cameras above and below, Zack improved the design and simplified the moves necessary to create a solution.

Testing, however, wasn't always a breeze. As Zack pushed the robot to its limits, it sometimes pushed back.

"There were times when it would just destroy the cube. It would misalign one side, then turn and explode into pieces and scatter across the room," he admitted. "But one night everything came together and it successfully solved the cube in the record time. I was very excited. I remember calling my grandfather. It was about one o'clock in the morning and he hung up on me the first time. I had to call him back."

That success eventually led to the raucous, record-setting moment in the Hoagland Arena on Oct. 15, and the transformation of the Rubik's cube from a jumbled mess to a perfectly color-coded solution. It's a metamorphosis that in some ways parallels Zack's own during his time at Saint Stephen's.

Entering as an ultra-shy sixth grader, he admits it was initially a challenge to fit in. Academic success came easily, but it was difficult for Zack to interact socially and he also struggled with a significant weight problem. He ultimately attacked both shortcomings with the same dedication that he applies

man, happy to share his intellectual curiosity with others. Despite his accomplishments, Zack remains humble and appreciative. I'm so proud of how he's grown and I'm excited to see where his explorations will take him – and potentially, all of us."

That growth was on full display as Zack graciously handled a frantic week of attention attracted by his amazing robot. He adeptly juggled a variety of media interviews leading up to and following the world-record feat, including a live appearance on Tampa's FOX 13 TV morning show, "Good Day, Tampa Bay," the day after the campus event.

And while the Guinness record may be seen as a crowning achievement for some, it's clearly just a launching pad for Zack, who will study computer engineering in college. Through a Saint Stephen's mentoring program, Zack recently met SSES alumnus Josh Jackman, who researches nanotechnology in Singapore. They are currently working on a paper about biosensors that will be published in a top technical journal.

"Zack is different even in the tech world. I've met many smart individuals who may ace a test, but there are very few people who can apply their intellectual skills to solve real-life problems," Josh wrote in an e-mail interview with the Sarasota Herald-Tribune. "Despite being young, Zack already fits within this special category. He has a maturity far beyond his years."