# OUT OF THE ORBIT

Piano junior **Anthony Stan** develops a system to track rogue planets in the solar system while dedicating time to his instrument

*By Ben Seelig*

Split between an hour of physics, two hours of calculus, and three hours of practice, piano junior **Anthony Stan** always finds time for his new passion, launching satellites.

What began as a simple beach trip with some friends from Suncoast Community High School ended with enrollment into the local group for CubeSats, orbital satellites that allow for at-home scientific investigations. Each modular cube is only 1000 cm^3 large, but is capable of being launched into orbit for research purposes.

“We had the opportunity to actually learn with a hands-on approach about how these satellites work. For example, we had our first in-person meeting a couple of weeks ago, and I learned how to solder in a library,” Stan said. “I bought myself an Arduino kit (a beginner electronics kit), and started learning how to use that, because that's what we use in the satellite.”

In late October, Stan was invited to a conference at Kennedy Space Center that was hosted by his group leader. There, he learned all of the facets that go into making a CubeSat, networked with researchers, and discussed the importance of AI in satellites, a topic he was passionate about. While at the Kennedy Space Center, Stan saw his first ever rocket launch up close.

“(When I saw that rocket launch), it hit me that there is so much more out there that we cannot discover in our lifetimes,” Stan said. “You only hear about rocket launches and space

exploration from TV and the internet. And sure, it's cool, at some point you might develop an interest for it, but it's not cemented into your brain until you see something like that happen."

Stan extended his interest in AI to his science fair project, which uses such technology to track, predict, and categorize rogue planets in the solar system. Planets attached to a host star are easier to study, since scientists can measure the luminosity. Rogue planets, however, do not orbit around a system, and they require the observer to find gravitational warping.

"I was always interested in what's beyond our Earth, beyond our solar system, imagining the unimaginable, these galaxies, (and) these massive stars that seem so distant and small from our point of view," Stan said. "I don't know if it was the wonder of looking up at the sky, or thinking of what's out there that really intrigued me when I was little. But now, I want to do this science fair project so I can improve my knowledge of AI."

Being the Co-President of TREDD and the Vice President of the Coding Club, Stan was constantly enrolling in technology clubs to improve his software skills. One field he wanted to be at the front of was AI recognition. The technology used in his project could also have applications in detecting skin cancer or brain abnormalities.

When it comes to his second passion, piano, it took two tries for him to secure a spot in the department. He got into Dreyfoos as a communications major after spending months on the waiting list, and said he was grateful to get in at all. He felt as if he was "missing out on a lot of opportunities" by not being in the piano department, though.

"When I walked out of Impromptu after I saw that performance and (saw) what the piano majors got to experience, I completely changed my mind," Stan said. "It was because of that experience that I immediately told my teacher I want to try again for piano."

In his first year as a piano major, he said he had the “worst stage fright.” He recalls his brother, piano junior Nicholas Stan, “got so mad because (his) hands would not stop shaking during (their) duet piece.” This is an issue he continued to deal with through junior year, but has gotten more comfortable coping with past mistakes.

“If (I get past my fears) by the time I graduate, I would have accomplished a lot as a piano major,” Stan said. “With the improvements that I’ve been seeing, I feel I’ve slowly been getting to that goal.”