

Pumpkin Blast 2018

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This year's annual Pumpkin Blast at Tate Farms was held November 3, 2018. The 2018 AIAA Greater Huntsville Section competition team, named the AIAA GHS Pumpkin Chuckers, consisted of an all-new team of engineers: Team Captain Alix Villanueva, Kanch Sridhar, Justin Soeung, and Lauren Fisher. The team was also greatly assisted by Dylan Stapp, captain of the AIAA GHS 2017 team who not only served as a resource for the reconstruction of the trebuchet, but worked tirelessly with the team on the competition day to fire shots.

With no previous Pumpkin Blast experience and a short time window to have a competition-ready machine, the AIAA GHS Pumpkin Chuckers settled on re-using the Fiffer trebuchet that AIAA GHS has used in the past. However, the previous design was stored completely disassembled with a few structural casualties from last year's dry-fire. Within twenty days, the team managed to transform a pile of wood and a bucket of bolts from a barn into a formidable pumpkin-launching siege weapon. Modifications were made to the legs of the trebuchet to reinforce their stability and avoid repeating the show-stopping snapping that occurred in the past.



Trebuchet on Oct 14 (Day One) in The Cage and on Nov 3 (Competition Day) at Tate Farms



2018 AIAA GHS Pumpkin Chuckers

This year, Lowe Mill served as the center of operations for the team during the build process. Huntsville STEAM Works, an Alabama nonprofit focused on education through Science, Technology, Engineering, Arts, and Mathematics, graciously provided a work area (affectionately named "The Cage") and equipment where the AIAA GHS Pumpkin Chuckers could meet and work on the trebuchet and also supplied transportation for the wooden juggernaut. Additionally, Huntsville STEAM Works both directly and indirectly provided the AIAA engineers an opportunity to share their work with the local community by fielding questions from everyone from the casual Lowe Mill passerby to youth attending a Huntsville STEAM Works workshop. Perhaps some of the most rewarding experiences of the assembly of the machine were getting kids excited about engineering and showing the applicability of subjects taught in school. Much of the work done at Lowe Mill was recorded by Huntsville STEAM Works and is planned to be released in a short video describing the arduous

journey of AIAA GHS Pumpkin Chuckers to Pumpkin Blast 2018.

As with every year, challenges were encountered along the way to the competition. One example of an unexpected difficulty was the transportation from Lowe Mill and reassembly of the machine on the firing line at Tate Farms. Although Huntsville STEAM Works provided an invaluable asset of transportation of the trebuchet via their box truck, the inner dimensions of the truck meant that the machine needed to be disassembled and then reassembled on the muddy cotton field at Tate Farms. During this process, hardware managed to collect mud and brackets were bent which in turn took longer to maintain and reassemble. The team worked into the night before the competition to reassemble as much as possible but ultimately were told to finish assembly in the morning. Continued reassembly and repair of parts that were damaged during

transportation to the farm took away precious practice shot time from the team. Once ready to fire, the machine took approximately 10 minutes to reset and fire again each time. Despite these struggles, the AIAA GHS Pumpkin Chuckers managed to fire a long shot of 116 yards, load a maximum of approximately 460 lbs of counterweight, and take home 3rd Place; accomplishing this all without any dry-fires.

In order to help future generations of AIAA GHS Pumpkin Blast teams, a guide was created which detailed the work of this year's team and provided some helpful hints for future builds. Despite all of the setbacks and not winning first in the competition, the 2018 Pumpkin Blast experience gave all team members an opportunity to have hands-on experience with power tools, promote AIAA and STEM within the local community, and work closely with other AIAA members to continue an annual tradition.