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Seven-Year-Old Hailey Dawson to Open Game 4 of World Series with 3D Printed Custom Prosthetic Hand from Stratasys

University of Nevada and Stratasys 3D printing help enable girl to partake in typical kids activities as well as pursue a major league goal

MINNEAPOLIS & REHOVOT, Israel--(BUSINESS WIRE)-- [Stratasys](#) (Nasdaq:SSYS), a global leader in applied additive technology solutions, says Game 4 of the World Series this Saturday will be opened by seven-year-old baseball fan, Hailey Dawson, who will pitch the ball with a 3D printed custom prosthetic hand, built by the University of Nevada, Las Vegas, using Stratasys 3D printing solutions.

This press release features multimedia. View the full release here:
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This won't be Hailey's debut with a Major League Baseball game. She has two such opening pitches under her belt in a quest to throw out the opening ball for each of the 30 MLB teams. Currently she has standing invitations from the league's 28 remaining teams.

See video of Hailey opening an [Orioles game](#)

Hailey was born with Poland syndrome, a rare birth defect, which resulted in her being born without her three middle fingers. Hailey had only one fully functional hand to help her perform all the activities a typical busy child enjoys.

Doctors told Hailey's mother, Yong Dawson, that when Hailey grew up, she could eventually be fitted with a custom prosthetic hand. But such hands can cost more than \$25,000 with traditional production methods, so it's an exorbitant sum for most children, who would need increasingly larger prosthetics as they grow.

7-year-old Hailey Dawson will open Game 4 of the World Series, pitching with her 3D printed prosthetic hand, using Stratasys 3D printing technology. (Photo: Yong Dawson Photography)

A Whole New Ball Game

Not content to wait years for a solution for her daughter, Dawson began an exhaustive search. Eventually, she found plans online for a 3D printed prosthetic

hand. Another major search ensued before Dawson found someone to help build the hand and fit it to then four-year-old Hailey.

The University of Nevada, Las Vegas (UNLV), agreed to take on the project in its Howard R. Hughes College of Engineering. Without the help of UNLV and the 3D printed hand, Hailey might not have gotten a functional hand until high school.

UNLV's Mechanical Engineering Department Chair, Dr. Brendan O'Toole, accepted the prosthetic hand as a department project in 2014 and has continued to work with the Dawsons since, building customized hands for baseball games and guiding engineering students in research for mechanical improvements. "The project combines mechanics and robotics, and we get the added bonus of helping someone," O'Toole said when he welcomed the project at the university.

By 2015, Hailey was throwing her first opening pitch at a UNLV Rebels baseball game, which quickly led to an MLB game, which led Hailey to formulate her goal of opening a game for all 30 MLB teams. Due to the publicity she got for her pitching goal, she was invited to open Game 4 of the World Series this Saturday, October 28, as the LA Dodgers face the Houston Astros at Minute Maid Park in Houston.

Dawson supports her daughter's goal, because she says, "I want to bring awareness to this solution and help other children like Hailey, who have Poland syndrome. I want people to know they can get help from someone who understands 3D printing. A hand can be built for under \$2,000, and maybe as cheaply as \$200. It's the perfect solution for children, who could out-grow several prosthetic hands before they stop growing. There are 3D printing companies out there who can build a hand for you, or a local school's engineering program may be willing to help."

A Big Hit With A Growing Child

Hailey's 3D printed hand has allowed her to enjoy most of the typical things other kids can do, such as riding a bike. In addition to making her natural hand more functional, the 3D printed prosthetic hand is something Hailey is proud to show off, "which has helped her build confidence and self-esteem," says Dawson. "Other kids love it, and she gets attention for it."

As Hailey grows, her prosthetic hand design can easily be scaled up and 3D printed to fit her. Making a custom device via 3D printing is substantially lower cost than traditional manufacturing techniques. While a design called the "Robohand" was the UNLV team's initial prosthetic, the team has changed to another design, called "Flexy-Hand 2." These designs are free to the public, so anyone, such as a professor, student, engineer, or 3D printing company can download the design for free.

"The current hand design is good, but we're looking at ways to improve it," says Dr. O'Toole. "One student is designing a more optimal, more functional thumb with improved dexterity and gripping power. Another student is working on a way to make the individual fingers flex more independently. And a third student is researching ways the device could be motorized.

“Working on Hailey’s 3D printed hand has been a great learning experience for our students. And our Stratasys 3D Printer is a critical tool to print these prosthetics. All of the various hand parts that we make have small internal channels. We run small diameter cables or ‘tendons’ through the channels to actuate the finger gripping action. The Stratasys 3D Printer is able to reliably print small intricate internal channels that allow us to assemble the hand quickly after printing.”

UNLV has been using Stratasys 3D printing solutions for over 10 years. In addition to its Stratasys Fortus 250mc 3D Printer, which is used for Hailey’s hand, the university also has a larger Fortus 400mc 3D Printer for use in its research lab.

Stratasys technologies enable designers to imagine and create products that are impossible to make with traditional manufacturing techniques, and the company’s solutions are changing the way everyday objects are designed and manufactured.

Stratasys (NASDAQ: SSYS) is a global leader in applied additive technology solutions for industries including Aerospace, Automotive, Healthcare, Consumer Products and Education. For nearly 30 years, a deep and ongoing focus on customers’ business requirements has fueled purposeful innovations—1,200 granted and pending additive technology patents to date—that create new value across product lifecycle processes, from design prototypes to manufacturing tools and final production parts. The Stratasys 3D printing ecosystem of solutions and expertise—advanced materials; software with voxel level control; precise, repeatable and reliable FDM and PolyJet 3D printers; application-based expert services; on-demand parts and industry-defining partnerships—works to ensure seamless integration into each customer’s evolving workflow. Fulfilling the real-world potential of additive, Stratasys delivers breakthrough industry-specific applications that accelerate business processes, optimize value chains and drive business performance improvements for thousands of future-ready leaders around the world.

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Online at: www.stratasys.com, <http://blog.stratasys.com> and [LinkedIn](#).

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