SDSU San Diego State University

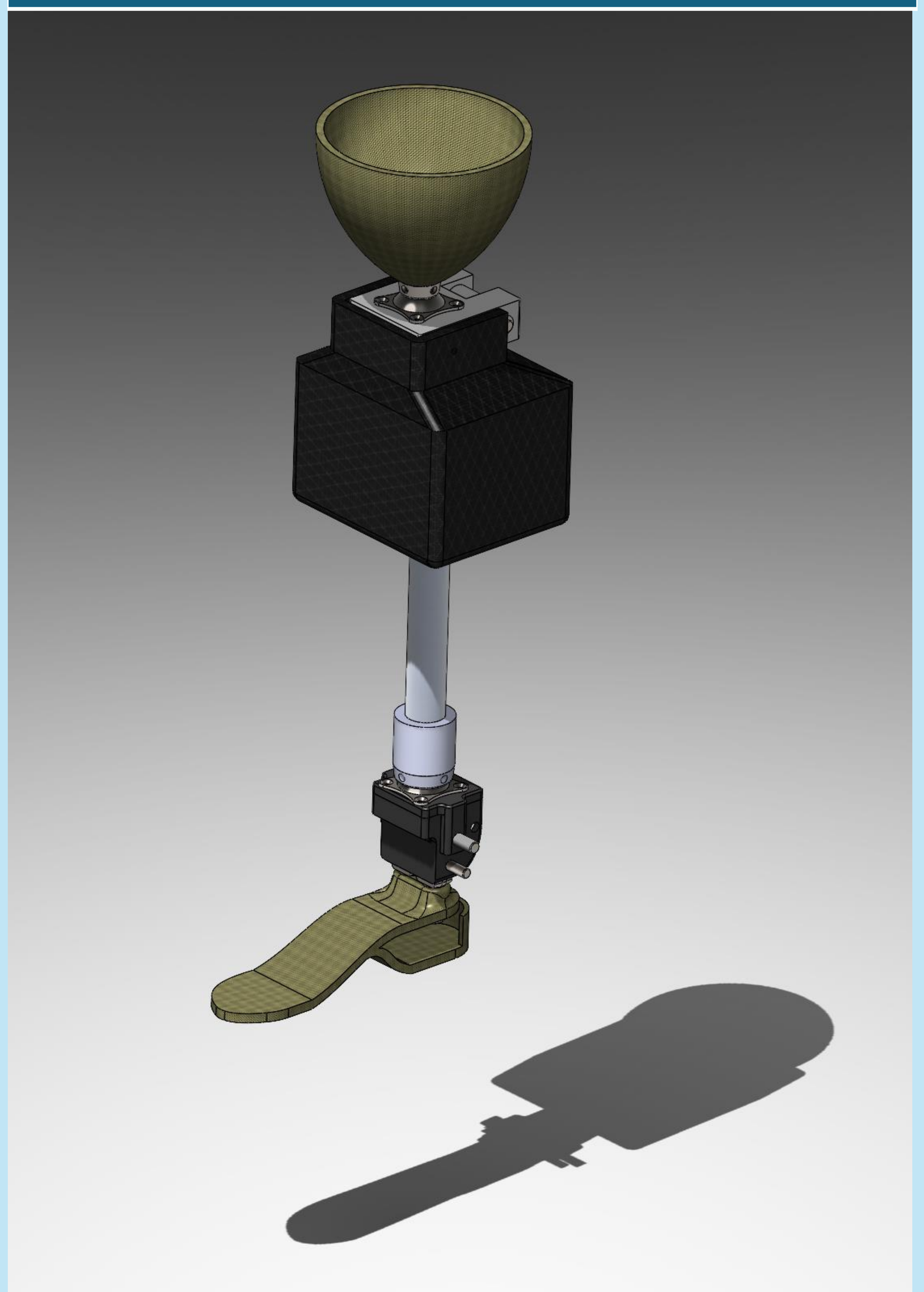
Snorkeling and Diving Leg Challenge

Sponsored by Quality of Life Plus

Project Overview

Problem: Our challenger, a veteran amputee, is an active individual who enjoys snorkeling and diving. He seeks to independently walk from land into water without the need for multiple prosthetic devices.
Need: A mechanical prosthetic leg that is buoyant, waterproof, and suitable for aquatic activities including scuba diving and snorkeling. The leg should withstand any forces generated while the challenger walks and swims, mimicking human anatomy while swimming.

Final CAD Assembly



Meet Team W.A.L.T.Z.

Hadia Bayat
Team Lead

Shaun Seko
Team Member

Calvin Fletcher
Team Member

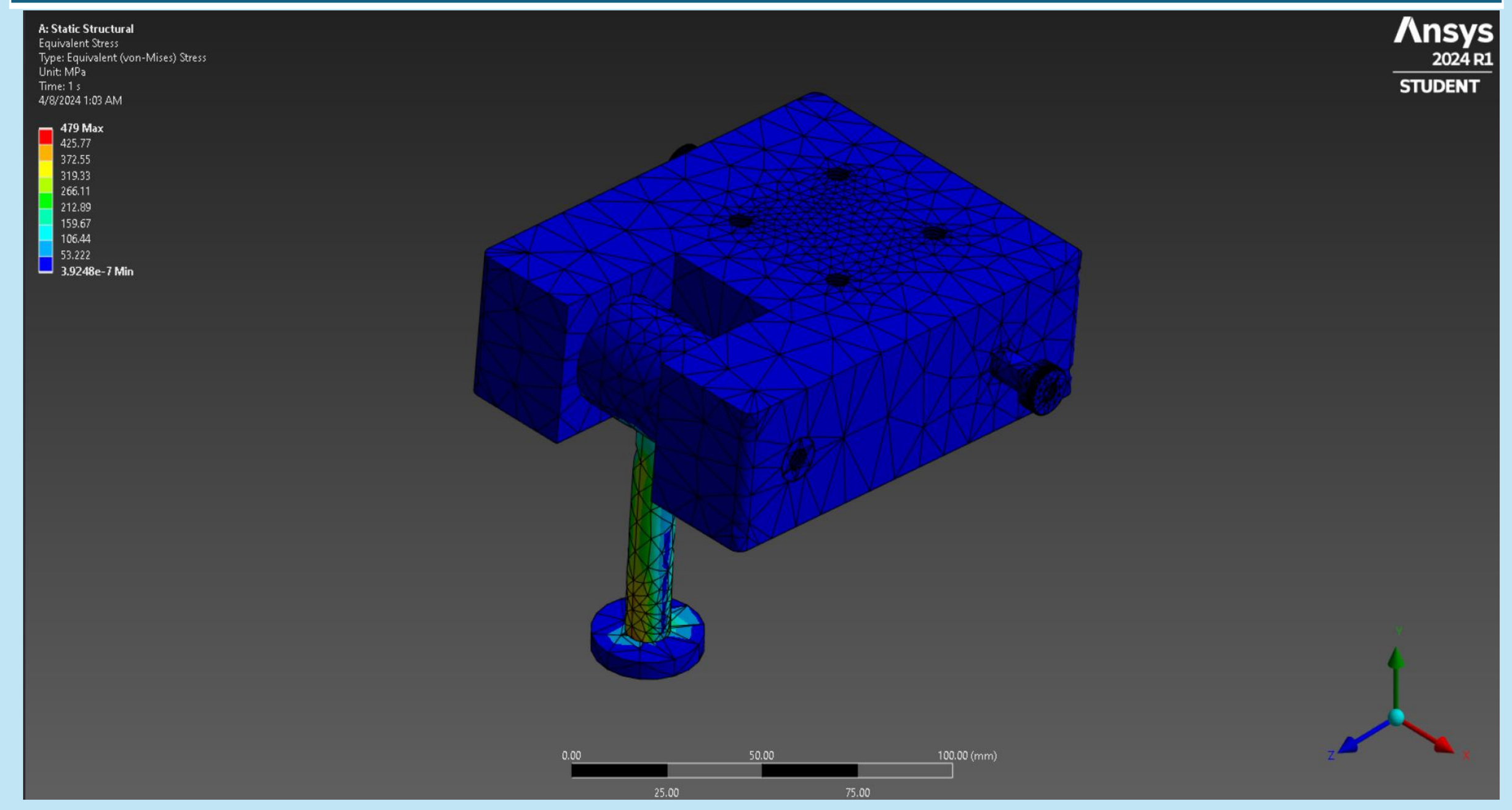
Brenna Gallagher
Team Member

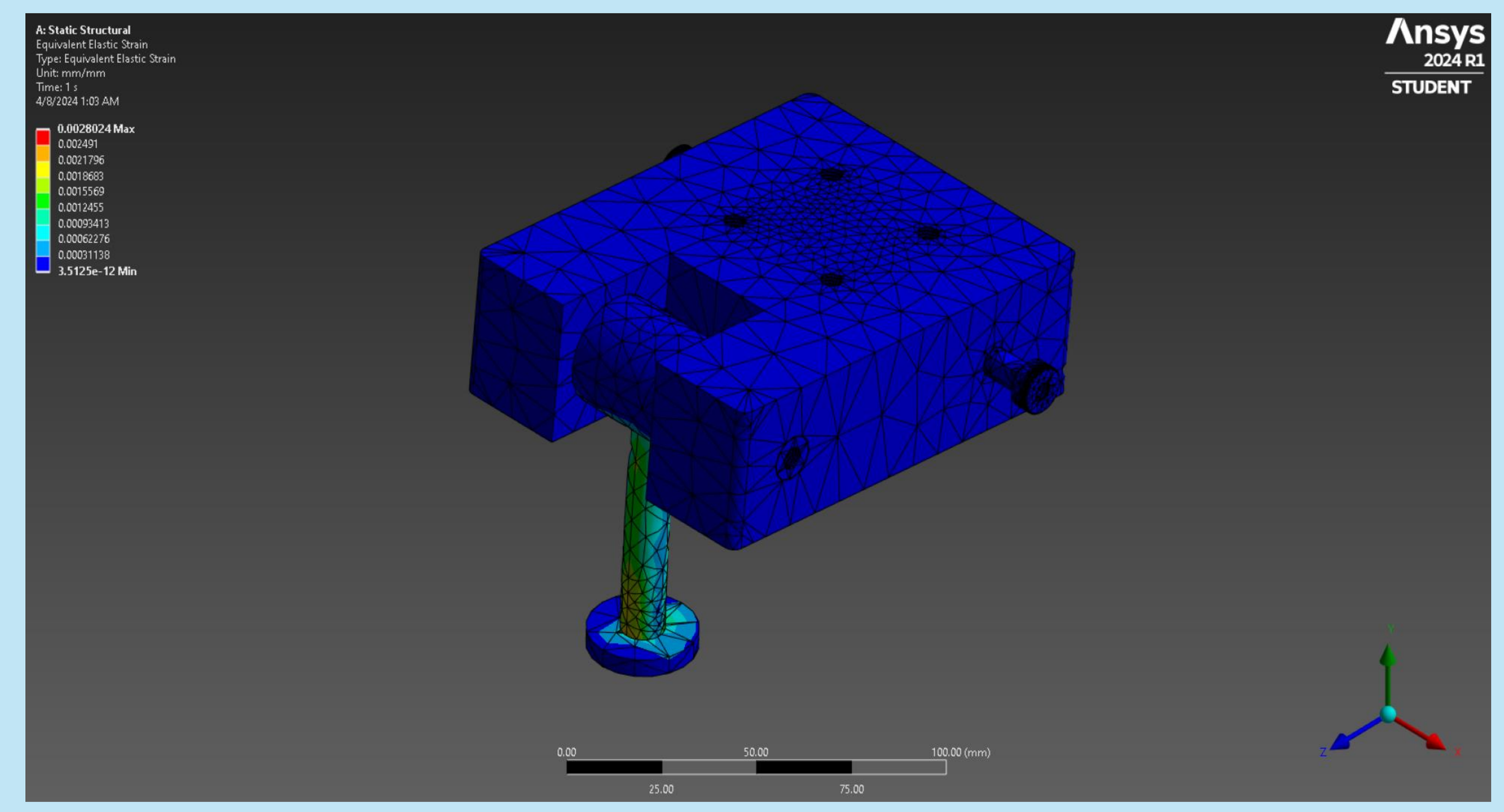
Testing

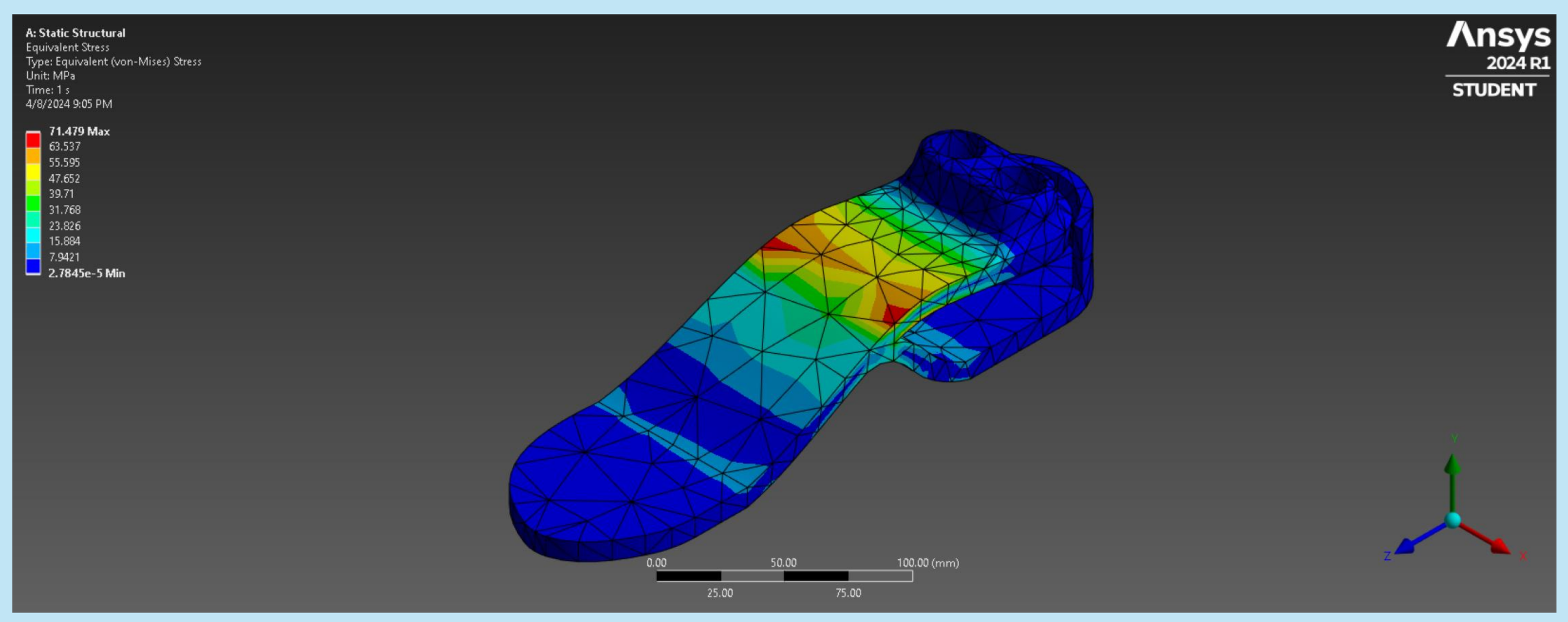
- Tests conducted to reinforce the performance of the leg:

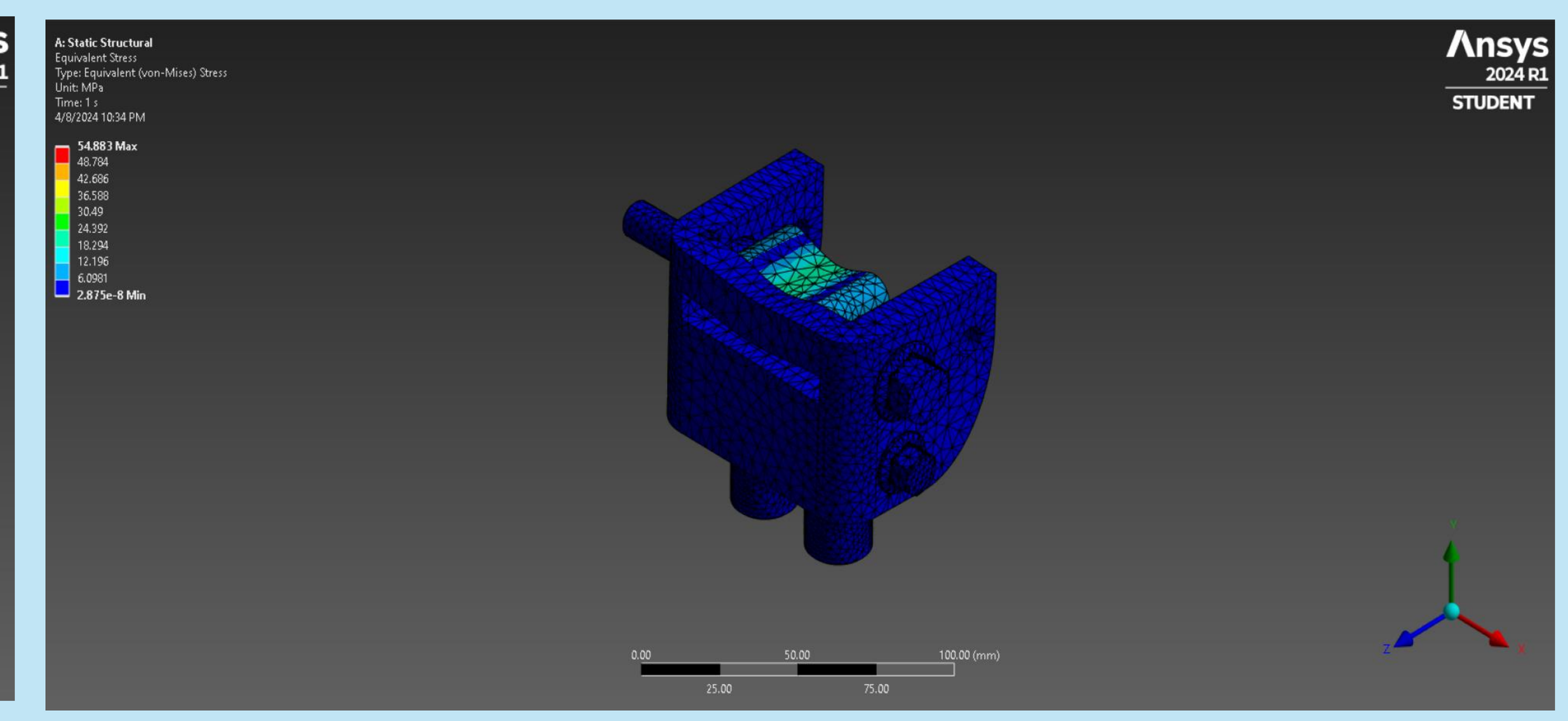
-Testing of foot on various surfaces to ensure the grip provided enough traction
-Testing of the range of motion on land with and without added forces
-Testing of buoyant force in water

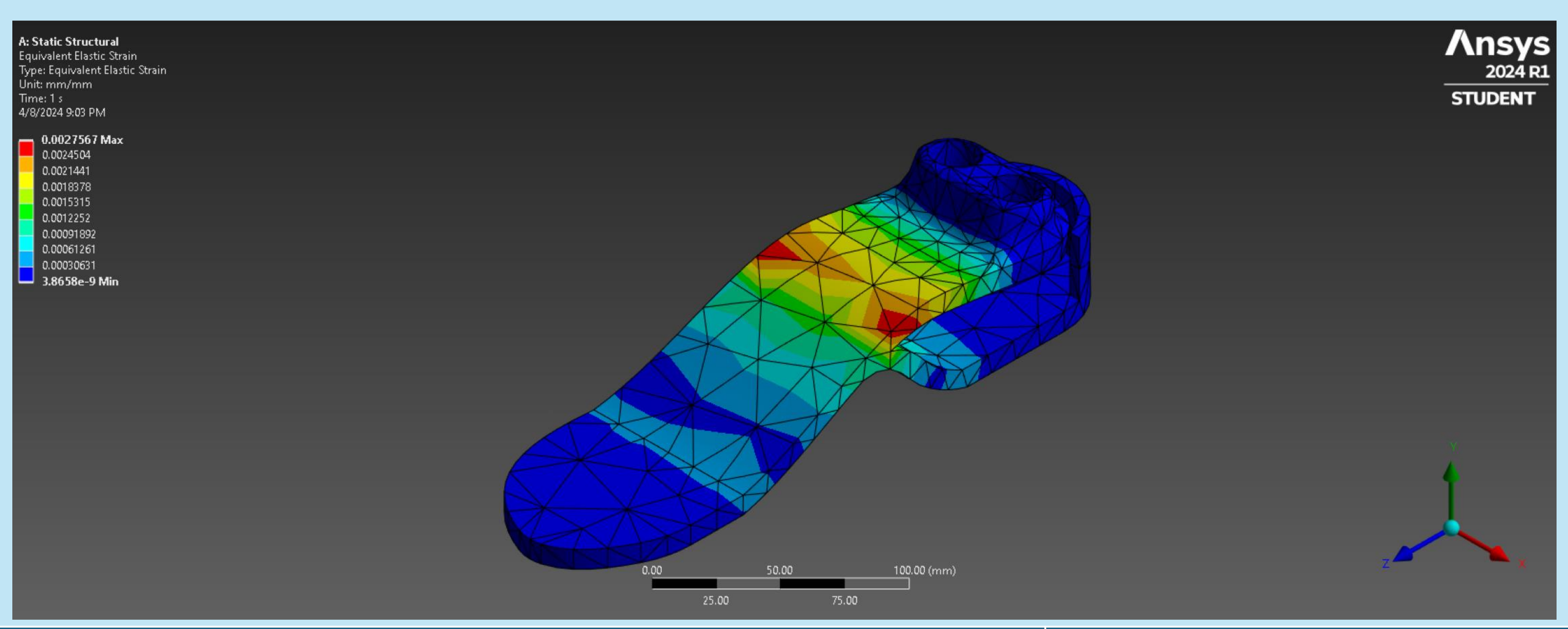
Conducted Analysis

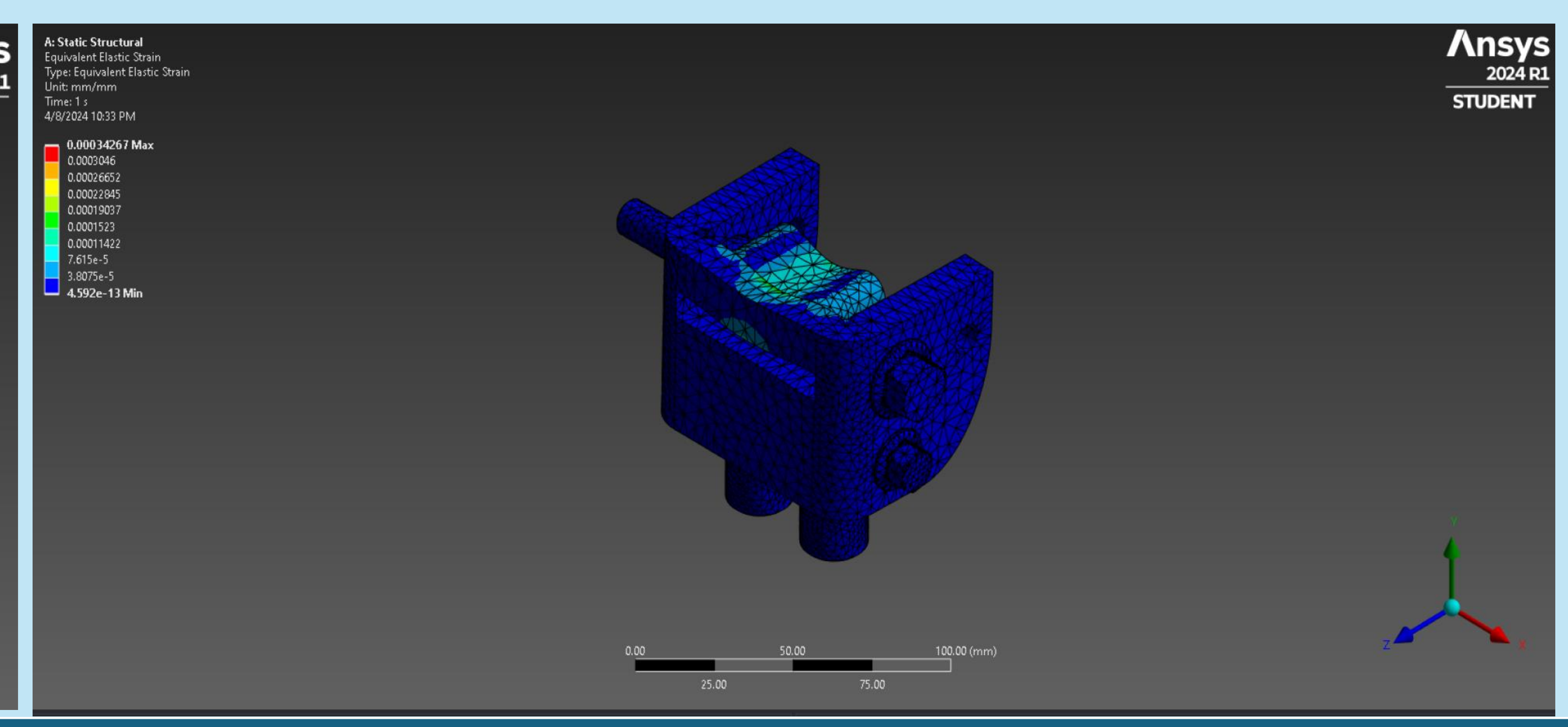












Meet the Sponsor

Quality of Life Plus (QL+)

A nonprofit organization that has been working since 2009 to connect QL+ challengers with S.T.E.M. students in college. These challengers, who are first responders and veterans with injuries or disabilities, work with the students to engineer technological advancements. This technology is customized for each individual challenger and their needs, with the goal of improving their quality of life.

Meet the Challenger

After completing his service in the Navy, Peter Arthur experienced a severe motorcycle accident that resulted in the amputation of his leg above the knee and nerve damage. Despite facing these significant health challenges, Peter remains a kind and charismatic individual determined to enhance his independence while pursuing his passions. He aspires to have a prosthetic leg that enables him to transition seamlessly from the beach to the water, allowing him to engage in activities like scuba diving and snorkeling with his friends and family.

Acknowledgments

Team W.A.L.T.Z. would like to thank Dr. Shaffar, Michael Lester, and the rest of the S.D.S.U. Mechanical Engineering department for their guidance and support. We would also like to thank our sponsor Scott Huyvaert, our challenger Peter Arthur, and the employees of Quality of Life Plus for trusting us with the resources to complete this project.

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