

Optimization of 3D Printing Custom Orthotics for Flat Feet

Client: Gunhee Lee

Email: Gunhee.Lee@live.mercer.edu

Project Description:

Orthotics are made by first scanning a patient's feet. Then using the curve of the feet, 3D model of insoles can be made, which will be 3D printed after.

As opposed to a few weeks of current custom orthotics, using 3D printing will allow reducing the production time to under a week, if not a day. This orthotics will have a novel design that allows gradual increment of the height of arch support, enabling users to have greater recovery of arches. In addition, it has the potential to have a cheaper production cost as 3d printing has minimum wasted material during production (i.e., low buy-to-fly ratio).

Main challenge of this project is optimization. There are different methods of scanning, modeling, and printing. Here, we'll focus on modeling. Lots of variation that can be made depends on where, how much, in what direction, in what angle, and using which tools to create orthotics.

Ideally, the team would consist of biomedical engineering and mechanical engineering students.